MEDICAL REPOSITORY,

FOR

FEBRUARY, MARCH, AND APRIL, 1811.

Statement (by the Secretary of the Treasury) of expenditures for relief of sick seamen, during the year 1809; *their amount, and in what manner made.*

Portsmouth.—The sick seamen are sometimes boarded in private houses, and attended by physicians, and are sometimes supplied by the overseers of the poor. A stipulated price for board and for medical attendance has been sometimes paid; at other times, the customary rates, without a previous stipulation, have been paid. The prices charged for board and nursing were $2, $2 50, and $3 a week. The total amount expended in the year 1809, was — D 171, C 28

Portland.—Seamen supplied as above: price charged for board, $3 a week. One seaman was paid for during the whole year, and another the greatest part of the year. Total, — 582 90

Boston.—There is a marine hospital, built and supported at the expense of the United States, with a physician at a salary of $1000, and a steward at $480 a year, with nurses, cooks, &c. at various rates. Provisions, medicines, hospital stores, &c. are purchased and paid for as wanted. In 1809, a barn which cost $250 was built at the hospital. On the average of the whole year, there were constantly twenty-three seamen in the hospital, of which about two-fifths were from the navy, and three-fifths from the merchant service. There were eight

	D	C
deaths during the year. The average expense was $6 20 per week, for each seaman. Total,	7432	16
Providence.—Sick seamen boarded in private houses, and attended by physicians. From 1st August, 1809, a physician was engaged, by contract, to attend all the sick seamen supplied at the charge of the United States, and to furnish the necessary medicines, for $200 a year. The price of board usually charged for them is $2 50 a week. Total,	781	49
Newport.—Sick seamen are supplied at the almshouse with board; the physician's attendance, medicines, hospital stores, &c. charged separately. The price of board is $3 12 1-2 a week. One insane seaman at this port is a constant charge through the year. The weekly expense, including medical attendance, &c. is about $6 for each sick seaman. Total for the year,	367	67
New-London.—Sick seamen boarded in private houses at $2 50 and $3 a week. A physician attends the whole, by contract, and furnishes medicines, at $200 a year. The average cost for each sick seaman at this port, for the year is $5 37 a week. Total,	591	69
Middletown.—Seamen boarded at private houses, at a charge of $2, $2 50, and $3 a week. Total for the year,	79	28
New-York.—The seamen are received at the New-York hospital, where all items of expense attending them, except funeral charges, cloathing, and the pay of a superintendent of seamen, at $250 a year, are borne for $3 a week. On the average of the whole year, there were constantly sixty-four in the hospital, of whom about one in fourteen belonged to the navy. In the year 1809, thirty-eight died. For three maniacs supported during the year, an addition of $1 50 a week each, is paid. The average expense was $3 25 a week for each seaman. Total,	10907	61
Sagharbour.—Occasional supplies to sick seamen in private houses; board charged at $3 50 a week. Total in 1809,	26	26

Philadelphia.—The seamen are received in the Pennsylvania hospital. $3 50 a week is paid for each, for all expenses excepting cloathing and those of interment. On the average of the whole year, thirty-six were constantly in the hospital. There were sixteen deaths in 1809. The average expense was $4 6 a week for each seaman. Total, D 7592 C 89

Baltimore.—The seamen are supplied, under a contract with doctor Tobias Watkins, with provisions, medicines, hospital stores, attendance, bedding, and every necessary thing, except cloathing and funeral expenses, at the rate, from 1st January to 22d July, of 65 cents a day, for each seaman; and from 23d July, to 31st December, 1809, at 55 cents a day for each seaman. There was paid in 1809, $588 75 for cloathing furnished to seamen in 1808. There were, on an average, forty-one seamen supplied throughout the year, of whom about one in twenty belonged to the navy. Eighteen died in 1809. The average expense for the year was $4 60 a week, for each seaman. Total, 10018 92

Alexandria.—Seamen are partly supplied at the almshouse, where the charge is $5 a week for board, medical attendance, &c.; and partly at private houses, where the usual charge for board is $3 50 a week, the medical expenses being a separate charge. Total expenditure for 1809, 319 44

Norfolk.—A public hospital, purchased and supported at the expense of the United States, with a surgeon at a salary of $840, an assistant at $600 a year, a steward at $8, nurses at $6 50 a month, and a matron at 50 cents a day. Provisions for the sick are furnished by a purveyor, at 25 cents a day for each seaman. The average number of sick supplied during the year 1809, gives eighteen for the whole term; the average expense of which was $4 47 a week for each. Total, 4298 07

Camden, N. C.—Sick seamen boarded in private

	D	C
houses, at a charge usually of $2 a week, physicians paid separately. Total for 1809,	92	22
Edenton.—Same as the last. Board charged at $3 and $3 50 a week. Total, for 1809,	89	59
Washington, N. C.—Same as the last. Board charged at $2 50 a week. Total,	47	97
Newbern.—Same as the last. Board $3 a week. Total,	162	46
Wilmington, N. C.—Same as the last. Board $3 50 a week. Total,	52	51
Charleston.—The net amount collected in the port is paid to the city treasurer, the corporation engaging to receive and supply such seamen as are objects of relief, from this fund. Total amount paid in 1809,	895	34
New-Orleans.—The seamen are received in the hospital of charity, and there supplied with what is necessary, except medical attendance, for 75 cents a day, each. A surgeon is paid by the United States, $1000 a year, for attending the seamen: an assistant and inspector occasionally, at $10 a month, and a matron permanently, at $10 a month. On the average of the year 1809, nine seamen were constantly supplied, at the average expense of $7 81 a week, for each. Total,	3542	31
Dollars,	48058	06

No accounts for the year 1809 have been received from Salem, New-Haven, Wilmington, Del. Georgetown, S. C. or Savannah; at each of which ports, expenditures, when necessary, have been authorized.

ALBERT GALLATIN.

Letter from the Secretary of the Navy to the Hon. Burwell Bassett, on the establishment of Navy Hospitals, dated Navy Department, February 22, 1811.

SIR,

Availing myself of the latitude allowed me by the honourable committee, of which you are the chairman, I sub-

mit for consideration, the following observations and notes, relative to pensions and hospitals.

First. As it respects the pensions of seamen and marines.

By the 8th section of the act for the better government of the navy, it is provided, that the pensions shall in no case exceed one half the monthly pay.

The power of regulating the pay of seamen and marines is vested in the President of the United States; that of seamen has been regulated from time to time according to circumstances, depending principally on the wages given in the merchant service. Hence, in the years 1798, 1799, 1800 and 1801, their pay was 17 dollars per month; in the years 1802 and 1803, it was 14 dollars; afterwards 10 dollars, and is now 12 dollars per month. The pay of the marine was early fixed at 6 dollars per month, and has undergone no change.

Soldiers in the land service may receive a pension of 5 dollars per month.

Hence it is obvious, that, under present laws, great inequality exists with respect to pensions; the same description of persons may at one time receive $8\frac{1}{2}$ dollars per month, at another 7 dollars, at another 6 dollars, at another 5 dollars per month. The most valuable seaman, however crippled in the public service, could not now receive a pension exceeding six dollars per month; and in the year 1800 or 1801 an inferior seaman, sustaining less disability, might have received $8\frac{1}{2}$ dollars per month. Cases of this kind, indeed, are now to be found upon the pension roll. It appears too, that the pension provided for the marine is two-fifths less than that provided for the soldier in the land service. This distinction between the marine and the soldier, is certainly not founded in any principle of justice; its existence, it is presumed, has escaped the attention of Congress, otherwise it would not have been suffered to remain so long to the prejudice of the marine.

A strong dissuasive to the continuance of this distinction arises out of the fact that the pension of the marine is paid out of a fund which his enterprise contributed to raise, whereas to pay the pension of the soldier, Congress have to make annual appropriations of money out of the treasury.

To remove the existing pernicious inequality in the pensions of seamen of the same class, and sustaining similar dis-

abilities; and to place the marine on an equality, in this respect, with the soldier, the 8th section of the act of the 23d April, 1800, (see vol. 5, page 125,) ought to be repealed, so far as respects the pensions of seamen and marines; and it ought to be declared by law that the pension of the able seaman should not exceed dollars per month, that of the ordinary seaman or boy dollars, and that of a non-commissioned officer, musician or private in the marine corps, five dollars per month. Under such a law, the compensation for wounds sustained in the public service, might be graduated by the measure of disability incurred; and as the law ought to provide for the highest disability that may be sustained, it is conceived, that the blank for able seamen might be filled with 10 dollars, and that for ordinary seamen and boys with six dollars, without transcending the bounds of justice, or falling short of the dictates of humanity. Surely 10 dollars per month would not be an extravagant compensation to a poor crippled sailor, deprived of the use of his limbs in his country's service, and who, when not able to pursue his profession, is, emphatically, like a fish out of water, and is as utterly incapable of making any kind of provision for his support, as the disabled soldier, who had never seen salt water, would be on board of ship.

Secondly. As it respects hospitals for the relief of sick and disabled seamen.

As a fund for the relief of sick and disabled seamen, the secretary of the navy is required to deduct from the pay of each officer, seaman and marine, belonging to the navy, 20 cents per month, and to pay the same quarter annually into the treasury, to be applied under the direction of the President of the United States. The amount, thus deducted and paid into the treasury, is $55,649 29, and there is a considerable sum deducted but not yet paid into the treasury; and yet no navy officer has, and but very few of the navy seamen have, received any benefit from it.

By law, the like deduction of 20 cents per month is made from the pay of each seaman in the merchant service, and the whole fund thus raised is applicable indiscriminately to the relief of officers, seamen and marines, of the navy, and the seamen of the country generally. The inconveniences and embarrassments, which arise from the placing of per-

sons, engaged under military law in the public service in hospitals, where no such law exists, have escaped the attention of Congress. In the few cases, which have occurred, of navy seamen being sent to such hospitals, experience has proved, that the commanding officers of the ships, from which they were sent, could never get returns made to them; and that, on an average, three out of five have deserted, as soon as they got in a convalescent state. Hence the propriety of having distinct establishments for the relief of sick officers, seamen and marines of the navy. Let the fund drawn from the seamen in the merchant service be appropriated for the relief of seamen in that service; and let the fund deducted from the pay of the officers, &c. of the navy be appropriated exclusively for them.

If such a law existed, and the supplementary provisions hereafter suggested were authorized by law, there might be, in a very short time, six capacious hospitals established, in which all the sick, of every description, of the navy, might be comfortably nursed; all the wives of seamen killed in action might be supported; all the children supported and educated; and young men, just entering the service as midshipmen, might acquire the invaluable knowledge of the theory of navigation, lunar observations and naval tactics, without costing the public a single cent. If doubts should be entertained as to the capacity of the means to accomplish these important and highly interesting objects, they may easily be removed by actual demonstration.

In addition to the 20 cents per month, let funds be raised from such of the following sources as may be thought most advisable, or to complete the goodly work at once, let the whole of them be added to the fund.

1. Let Congress declare by law that all the balances due to deserters from the service should be forfeited and thus applied.

2. That the balances due to seamen dying in the service, should be invested in funds, and the interest thus applied, until such balances should be called for by either the wives, children or known legal representatives of the deceased.

3. Let the disabled person, entitled to a pension, make his election between going into a hospital for life, or receiving the pension allowed him by law. If he preferred going into a hospital for life, which many would do, then

his pension to be applied towards the support of the hospital.

4. Let the balance at this time, or the unapplied amount of the money raised by deducting 20 cents per month from the pay of the officers, &c. of the navy, be thus applied.

5. Let Congress add to the 20 cents, which by the act of 2d March, 1799, the secretary of the navy is required to deduct from the pay of the officers, seamen and marines of the navy—Instead of 20 cents, 50 cents might be deducted. This of itself would produce 150 per cent. upon the amount now deducted. The officers, seamen and marines, would, it is confidently believed, cheerfully consent to a deduction of one dollar per month from their pay, if they knew that the amount was to be applied exclusively to their benefit.

6. Let the rations of the seaman or marine, and one of the rations of each officer, while in hospital, be deducted and thus applied. See note A.

7. Let all mulcts of pay, by sentence of courts martial, and all stoppages of grog, for minor offences, be thus applied.

8. Let ten or fifteen per cent. on slop clothing, furnished the seamen, be thus applied. At this time the sailor on board ship, is furnished with slop clothing, from 25 to 33 1-3 per cent. less than he could get it at, out of a slop shop; so that if 10 per cent. on the present price were added, the seaman would still get the slop clothing from 15 to 23 1-3 per cent. less than he could buy it for, out of a slop shop. Hence he could not reasonably complain at the making of the proposed addition to the price, especially when he would reflect that the amount thus to be produced was intended exclusively for his benefit, and that of his brother seamen.

In addition to these provisions, it will be recollected, that many of the officers necessary for the hospitals might be selected from among those disabled in the service, who would gladly serve without any addition to their pensions, excepting merely their board, the cost of which to the establishment would be very inconsiderable. There are now on the roll of pensioners, one captain of the navy, one lieutenant, one surgeon's mate, and a number of boatswains, gunners, sail-makers, sergeants of marines, cooks, &c.

Further, it is presumed that in or near the navy yards,

would be the most suitable places for the erection of hospitals. In that case, the commandants of the yards might be governors ex-officio of the hospitals, without any additional pay whatever. With them the secretary of the navy would hold his correspondence upon all subjects, in relation to the hospitals.

The wives of seamen killed in the service, would make nurses and attendants on the sick; do all the necessary sewing, washing, &c. and their children might, with the pensioners and convalescents, work the gardens.

The persons having the immediate charge of the hospitals ought to be acquainted with navigation, &c. and have the qualifications of teachers; so that the children of seamen killed in the service, might, when not at work in the gardens, be taught reading, writing and cyphering; and young men just entering the service as midshipmen, might be sent to the hospitals to be taught navigation, &c.

If deemed expedient, eight or 10 dollars per month might be deducted from the pay of midshipmen, while studying navigation in the hospitals, and the amount might be applied towards paying the teacher, or if more than sufficient for that, towards defraying the general expenses of the hospitals. This indeed would be teaching them this valuable knowledge at less expense than they could possibly acquire it in any other way. To me it appears very clear, that the effects of such institutions, under proper regulations would be happy indeed —The wretched sailor, covered with wounds received in the service of his country, might be saved the debasing employment of beggary. The woman widowed, the child orphaned, in the gallant achievements of the husband and father, might be rescued from wretchedness, probably disgrace: a body of men devoted, from gratitude, to the service of their country, would here be raised up; the benefits of education would be extended; a competition to be admitted into the public service would be excited; and the brave would be encouraged and stimulated; without costing the public one additional cent.

Respectfully submitted, by

PAUL HAMILTON.

NOTE A.

The ration would of itself be sufficient to defray the expenses of every description of provisions, wines, liquors, &c. required for the sick in hospitals, under proper regulations. The experiment has been fairly tried in a small hospital at New-York, under the care of Dr. Samuel R. Marshall, a surgeon in the navy of the United States. The following is the result of that experiment:

For three months, one ration per day, for each man sick in the hospital, at 20 cents, amounted to	$628 20
The expense of every description of provisions, &c. including pot herbs, soap and candles, was	301 57¼
Leaving a balance in favour of hospital, of	326 62¾

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AN ACT

Establishing Navy Hospitals.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That the money hereafter collected by virtue of the act, entitled "An act in addition to 'An act for the relief of sick and disabled seamen," shall be paid to the secretary of the navy, the secretary of the treasury, and the secretary of war, for the time being, who are hereby appointed a board of commissioners, by the name and style of commissioners of navy hospitals; which together with the sum of fifty thousand dollars, hereby appropriated out of the unexpended balance of the marine hospital fund, to be paid to the commissioners aforesaid, shall constitute a fund for navy hospitals.

Sec. 2. *And be it further enacted,* That all fines imposed on navy officers, seamen and marines, shall be paid to the commissioners of navy hospitals.

Sec. 3. *And be it further enacted,* That the commissioners of navy hospitals be, and they are hereby authorised and required to procure at a suitable place or places proper

sites for navy hospitals, and if the necessary buildings are not procured with the site to cause such to be erected, having due regard to economy, and giving preference to such plans as with most convenience and least cost will admit of subsequent additions, as the funds will permit and circumstances require; and the commissioners are required at one of the establishments to provide a permanent asylum for disabled and decrepid navy officers, seamen and marines.

Sec. 4. *And be it further enacted*, That the secretary of the navy be authorised and required to prepare the necessary rules and regulations for the government of the institution, and report the same to the next session of Congress.

Sec. 5. *And be it further enacted*, That when any navy officer, seaman or marine, shall be admitted into a navy hospital, that the institution shall be allowed one ration per day during his continuance therein, to be deducted from the account of the United States with such officer, seaman or marine; and in like manner when any officer, seaman or marine, entitled to a pension, shall be admitted into a navy hospital, such pension during his continuance therein shall be paid to the commissioners of the navy hospitals, and deducted from the account of such pensioner.

On the CULTURE *and* MANAGEMENT *of* HEMP. *In a letter from* PAUL HAMILTON, *Secretary of the Navy, to* THOMAS NEWTON, *Chairman of the Committee of Commerce and Manufactures, dated January* 21, 1811.

SIR,

I HAVE had the honour of receiving your letter of the 17th instant.

As to the expediency of encouraging the culture of hemp by protecting impost duties, or by prohibiting the importation of that article into the United States and its territories, it is not, I presume, expected of me to make any observations, as these are subjects appertaining peculiarly to the treasury department, and no doubt the secretary of the treasury can afford all the information necessary to enable you to form a satisfactory opinion upon them.

Without venturing an opinion upon the expediency of either of these provisions, I will submit for your considera-

tion the following observations relatively to the culture and dressing of hemp.

In the essays first made by our countrymen in the culture of hemp and in dressing it for market, the disadvantages of inexperience were sensibly felt. Many errors, added to the dissuasives of previous habit, discouraged its culture: doubts too, whether the climate or soil of our country was adapted to the raising of hemp, were entertained. But very few indeed indulged the expectation that we should ever be able to make hemp equal to that of Russia. Hence, for many years the culture of this important article progressed slowly. Our countrymen, however, stimulated by their characteristic enterprize, and by hopes of ultimate success, persevered in repeated experiments, and have at length acquired that practical information, which has corrected many of their first errors, and now enables them to raise hemp in such quantity and of such quality as to compensate them amply for their trouble. Still, however, they have not yet acquired that extensive information upon the subject, which would assure to them all the advantages arising from the culture of this valuable article.

In preparing the hemp for breaking, the pernicious practice of what is commonly called "dew rotting" still prevails to a great extent; a practice tedious in its process, partial and unequal in its effects upon the fibre, and destructive of considerable quantities of hemp, by the unavoidable exposure of it to the winds, which blow it about and entangle it. Hemp thus prepared is in some places strong, in others weak; and has, moreover a dark colour, all which materially affect its value.

In hemp there is a viscous gummy substance by which the fibres of the bark are bound together and to the body of the plant; and all that is necessary to prepare it for breaking is to dissolve this substance. The experience of other nations has long since decided, that this dissolution can best be effected by immersing or steeping the plant in pure clear running water, which, in a much shorter period of time than any other system heretofore practised, produces this dissolution over all parts of the plant equally, makes it equally strong in all places, renders it more flexible, gives it a lively bright colour, and what is an object of vast importance, especially as respects durability under water, it will receive and retain a greater portion of tar, than when pre-

pared by " dew rotting." It may be here further remarked, that the more clear and pure the stream of water, the brighter will be the colour of the hemp.

" Dew rotting" requires many weeks of constant attention. But practical men affirm, that in a *pure warm stream* of water, the process of dissolution will frequently be completed in five or six days.

In Russia, three weeks are allowed for steeping where the water is not very cold; but if cold, as in rivers and springs, five, and sometimes six weeks are found to be necessary. To ascertain whether the hemp be sufficiently steeped, a head is taken out of the pound, dried and beat, and if the husk comes off, the hemp is considered as having been sufficiently steeped. It is then taken out of the pound and suspended upon sticks placed horizontally, for the purpose of drying; after remaining in the open air in this situation about a fortnight, it is removed and put into a kiln, where it is suffered to remain 24 hours. It is then ready for breaking, which operation is performed by means of a hand mill; after this is done, the husk is beaten off by striking the heads obliquely with iron and wooden instruments of the shape of a large two-edged knife; finally it is drawn through a wooden comb with one row of wide wooden teeth, for the purpose of unravelling and cleaning it.

As to the climate and soil best adapted to the culture of hemp, it may be observed that it is raised both in the frigid and torrid zone; and that any soil if not wet may be made to yield hemp, though the richer the soil the better, and a flat country is for this purpose to be preferred. On the waters of the Ohio, Mississippi, Susquehanna, Potomac, James River, and other parts of the United States, there is an abundance of land peculiarly adapted to the culture of hemp.

As to the certainty and profit of a crop of hemp, it is believed that no crop is more certain when sown in ground adapted to it; and to the grower it yields a profit superior to most articles and exceeded but by few. An acre of ground well ploughed, harrowed and manured, will yield one thousand pounds of clean hemp, worth when properly cured and dressed from 100 to 150 dollars, sometimes 200 dollars. The labour and necessary buildings required, in the sowing, preserving and preparing for market, a crop of hemp, are inconsiderable when compared with some other articles, and

especially tobacco, while the profit is greater and the injury done to the soil much less.

From a disposition to encourage the culture of hemp, cordage made of American hemp has been brought into use in our navy. For standing and running rigging, and indeed for most other purposes, excepting cables, it is found to answer very well, even when made of "dew rotted" hemp. Of the "water rotted" hemp, we have not yet been able to procure a sufficient quantity to justify our excluding the use of Russia hemp, especially for cables. American "water rotted" hemp is no doubt equal in all respects to the best Russia hemp: indeed, I rather incline to think it superior. Upon this point, however, the samples herewith sent will enable you to form an opinion.

No. 1, is a sample of American "water rotted" hemp grown on Blennerhassett's island.

No. 2, is a sample of Russia hemp, delivered to me by a rope-maker, as the *best* kind of Russia: in this, however, I incline to think there must be some mistake, though it is certainly good hemp.

No. 3, is a sample of American "dew rotted" hemp, grown in Bottetourt county, Virginia.

Upon examining these samples you will, I believe, find the opinion which I have ventured to express, with respect to the mode of dressing hemp, confirmed in a great measure. The great difference between "water rotted" and "dew rotted" hemp, will be obvious to you from such examination.

American "dew rotted" hemp being of a dark colour, frequently neither broke nor scutched as it ought to be, and brought to market without being properly embaled, does not, in such cases, command a good price in our markets. These are the causes, and this the effect. The growers of hemp ought not, however, to be discouraged by this circumstance. They should remember, that in removing the cause the effect will cease; and they may be assured that if their hemp is properly prepared, it will always command a price equal to the hemp of Russia, probably superior. For my own part, as secretary of the navy, I can only say, that in such case I should feel it to be my duty to give a decided preference to hemp of our own growth.

The quantity of hemp raised in our country increases every year, and no doubt exists, that in a very short period of time enough will be raised to supply every public and private demand, for all the purposes to which it is applicable.

The great desiderata to be obtained, appear to me to be, to persuade our countrymen to relinquish the prevailing pernicious practice of "dew rotting," and to adopt that practice which the experience of other nations has approved, namely, the steeping in water: this done, they will soon find their advantage in the change; and thus a new and powerful impulse will be given to the culture of this valuable article.

Should you think it expedient to offer any inducements to produce this change in the manner of dressing our hemp, whence would flow such happy effects, permit me to observe, that the only one which at this time occurs to me, as coming within the range of my official duties to execute, would be an annual appropriation by Congress, of a sum of money enabling me to contract for a supply of American hemp and canvass for the use of our navy. Should this plan be approved, the appropriations should be made in time to admit of contracts being formed prior to the commencement of the season for cropping; and the first appropriation should be made distinct from other appropriations, or it might be added to the estimates for the current year in the first instance—this would involve an appropriation in the first year exceeding the amount required in that year for the expenses of the navy, but it would be a provision for the ensuing year, and the amount might be deducted from the estimates of the ensuing year. The propriety of this provision will readily occur to you, when I state the fact, that it would not be possible at this time to contract for these articles deliverable in time to be used within the year; they could not be delivered till after the crops of this year shall have been gathered and prepared for market. In the contracts which might thus be made, it would become my duty, in execution of the object of Congress, to stipulate that the hemp should be steeped in water instead of being exposed to dews; and upon good security being given, a portion not exceeding one fourth or one third of the amount of each contract might be advanced. These contracts being judiciously distributed in different parts of the country, and what would be just, a higher price being given than "dew rotted" hemp would command, it would not be unreasonable to expect that a spirit of emulation, always useful to public improvements, would be excited, and powerfully assist in exploding present errors and in producing the change in the dressing of hemp; which, in my opinion, would essentially promote individual and national prosperity.

Some few of our countrymen do, at this time I am told, entertain apprehensions that our markets will be overstocked with American hemp, and that the price will be greatly diminished. This admitted, they have it in their power to prevent the importation of all foreign hemp, by making theirs in all respects equal to foreign hemp. This, indeed, in a national view, would be an important point gained. But when it is considered to what a variety of purposes hemp is applicable; that we are at this time greatly dependent upon foreign countries for hemp, for canvass, and linens of various kinds made of hemp; that there exists a spirit of patriotism and of persevering industry ready to be exerted, when fit opportunities shall present, to shake off this dependence; that if more hemp should be raised than will be required for cordage, factories of canvass and linens will necessarily be established; such apprehensions lose their force, and yield to reflections and anticipations of the most agreeable nature.

A comprehensive view of this subject leads us to cherish the expectation, that the United States will, at no very distant period, become exporters of hemp, as they now are of every other description of naval stores and of cotton; and that the individuals who raise it, will, like those who raise other naval stores and cotton, experience all the beneficial effects resulting therefrom.

These observations are submitted to you, sir, with all the diffidence which the novelty of the subject naturally excites; and with the hope that they may be useful in aiding your deliberations upon the highly interesting question now under your consideration.

Russian method of cultivating and preparing HEMP. *Communicated by* JOHN QUINCY ADAMS, *Esq. Minister at the Court of St. Petersburg, from the United States.*

IN Russia when the season is mild, the Hempseed is sown about the 1st of June, old style. The richer the soil employed for it the better. The chetwert of seed, (100 chetwerts are equal to 73 quarters, Winchester measure) is sown on a piece of land of 80 fathoms (English feet) long, and 60 fathoms broad.

The land is first ploughed and harrowed, and about two hundred single horse loads of dung being spread upon it, it

is left for six days, and it is again ploughed, and the seed sown and harrowed the same day.

In about four months the seed becomes ripe, and the hemp is then pulled up with the roots; if it be allowed to remain too long in the ground it is apt to become harsh—it is bound into bundles or bunches of four handfuls each; these are hung upon sticks placed horizontally, and allowed to remain so for two days. It is then made into *cut* or *threshed* hemp as may be agreeable.

The cut hemp is made by chopping off the heads containing the seed; these are put into the kiln, and after remaining there for 13 hours, the seed is beaten out.

If threshed hemp is to be made, the heads or tops must not be cut off, but the bunches of hemp placed entire in the kiln, and if the weather be warm, it will be sufficiently dry in three days, when the seed must be threshed out of the heads; in either case, three days after the seed is separated from it, the hemp must be put to steep or rot, either in a stream or a pond; and that the hemp may be entirely immersed, it is put under wooden frames, upon which stones are placed; or where they are not to be had, earth is substituted after the frames are covered with planks.

The clearer and purer the water, the better will be the colour of the hemp. Where the water is warm, three weeks steeping will be sufficient; but if cold, as in rivers, springs, &c. five weeks or longer may be necessary. After the expiration of this period, a head of the hemp is taken out and dried; if on beating and cleansing it, the husk comes off, the hemp may then be taken out of the water, but if the husk still adheres to it, it must be allowed to remain sometime longer. This trial must be repeated from time to time until the husk separates, when the hemp must be taken out of the water, and suspended to dry, as directed before on its being taken off the ground.

The hemp is now made into the two sorts, distinguished by the names of *spring* and *winter* hemp, the former being dry, and of rather a withered appearance; the latter being moist, and of a fine brownish green colour, containing more of the vegetable oil, and therefore more apt to heat, though if not shipped at St. Petersburg or Riga before September, there is not much risk of its heating any more on board the ships especially on short voyages, as to England, and is the best kind for cables.

If it be intended that the hemp should be early ready for the market, it is made into winter hemp, by the following process: on being taken out of the water, it is left in the open air for about a fortnight, when it is put into the kiln for 24 hours, after which it is broken by means of a hand-mill, and the husk is then beaten off by striking the heads obliquely with iron and wooden instruments, of the shape of a large two-edged knife: lastly, to unravel it, it is drawn through a wooden comb or card, with one row of wide wooden teeth fixed perpendicularly.

The hemp is then laid up or suspended in sheds, and is fit to be sorted, bound in bundles, and loaded in the barks.

The hemp intended to be prepared as spring hemp, is allowed to remain exposed to the weather the whole winter, until it be dried by the sun in the spring, when it is broken and cleansed in the same manner as winter hemp.

As the greatest part of the summer elapses before it can be made fit for market, none of this hemp reaches St. Petersburg until the following spring, that is, in two years after it was sown.

The hemp is sowed in the same manner as lintseed, rye, or wheat. Land of a sandy soil may also be employed for it; but then it must be strongly manured, otherwise it will be too short: and a flat country should always be preferred.

One chetwert of seed, commonly yields 25 pounds of hemp, and 12 chetwerts of hemp seed.

St. Petersburg, March 11, 1810.

AN ESSAY *on the* EXOTIC PLANTS, *mostly European, which have been naturalized, and now grow spontaneously in the Middle States of North America. By* C. S. RAFINESQUE SCHMALTZ.

TO SAMUEL L. MITCHILL, New-York.

Palermo, 1st April, 1810.

DEAR SIR,

AMONG the vast number of plants common to different countries, it is often difficult to discern which are those that were originally native of each, or which have been, in the course of time, mutually exchanged and naturalized; particularly when these last grow spontaneously, and mixed with the former: hence, in most of the Floras, no

distinction is made between them. This distinction, however, and the knowledge of the time and mode of their reciprocal emigration and naturalization would afford matter to a variety of enquiries and observations; but in this essay I mean to bound myself in detailing the numerous acquisitions of this kind that the United States of America, especially the more central Atlantic ones, which I know better, have received since the Europeans settled them, and introduced by degrees with them, not only the greatest part of the worthy productions of their native country, but likewise accidentally several of no value, or even noxious. I invite, meanwhile, all botanists to make similar enquiries in the countries they inhabit, or will have occasion to visit, in order to illustrate this interesting part of botanical geography. This subject has not been enough studied even in Europe, where Linnæus began to elucidate it in his dissertation called *Colonia Plantarum*, inserted in his AMŒNITATES ACADEMICÆ. And several botanical authors have indicated in their Floras some of the plants which different regions have mutually exchanged, or have received from the other parts of the world. None has, however, to my knowledge, as yet undertaken to illustrate it entirely, and to discern with certainty all the species that ought to be considered of exotic origin, although they were naturalized by time or different circumstances, and to indicate by what means their emigration and spreading was effected.

It would therefore be out of my object to enumerate the plants which Europe has received from North-America. The well known

Nicotiana tabacum,	Phytolacca decandra,
Zea mays,	Datura stramonium,
Solanum tuberosum,	Oenothera biennis,
Cactus opuntia,	Erigeron canadense,

are only a very small portion of them. Their whole number does not however amount by far to as many as those which North-America has in her turn received from Europe: the above mentioned plants already grow spontaneously in several parts of Europe. Several others that are in the same case have not yet been even mentioned. I shall perhaps be enabled, at a future period, to give a particular account of them.

The facility that these two continents have had to assimilate their mutual productions, is partly owing to the affinity

of their climates, which likewise accounts for the similarity of several of their productions. They are, in fact, situated nearly within the same degrees of latitude, and enjoy a temperature scarcely unlike. Thus, no wonder, if at the discovery of North-America a great variety of European plants were discovered in it, which have since been intermixed with those introduced after that epoch. It is, however, still possible, though not very easy, for an attentive observer to discriminate the species primitively common to both continents from those naturalized since; being led thereto by the knowledge of the places where they grow, (a very small number only of naturalized plants having spread in the woods or in wild localities, far from the towns or habitations,) and the tradition helped by an enquiry into the motives of their importation.

Nor does it come within my plan to mention all the plants originally natives of both countries. The exact enumeration of those which have been introduced into the United States will sufficiently point them out to botanists; and they will not confound them with the European or other exotic plants, which are only cultivated in the fields or gardens, and never grow spontaneously as they do. It will be sufficient to say, that most of the plants that are found to be in the first mentioned circumstance belong to the natural orders of the *mushrooms*, *algas*, *mosses*, *lichens*, *grasses*, *cyperoids*, *caryophyllates*, *polygonates*, &c. and that besides these the genuses *galium*, *veronica*, *pyrola*, *juncus*, *drosera*, *oxalis*, *rumex*, *potentilla*, *ranunculus*, *trifolium*, *equisetum*, *lycopodium*, *asplenium*, *amaranthus*, *myosotis*, &c. are almost the only ones which offer several species of this description.

Several other plants of the United States had been considered by some authors as similar to European plants, which after nicer investigations and observations have proved to be different; and it is probable a good many are yet in a similar condition. This has diminished, or will diminish considerably, the number of plants thought common to both countries. It would be needless to name all those of that denomination; but the following list of some among the most striking, will serve to elucidate my meaning.

The *Ilex opaca* of Aiton was formerly thought to be the same as the *I. aquifolium* of Europe, by Kalm and Linnæus.

The Fagus feruginea l'heritier,	F. sylvatica, Linn.
Betula serrulata, Aiton,	B. alnus, by Linn.

Castanea americana, Barton,	Fagus castanea, Linn.
Gentiana crinita, Wildenow,	G. ciliata, Linn.
Scutellaria parvula, Michaux,	S. minor, Muhlenberg.
Lithospermum latifolium, Michx.	L. officinale, Muhl.
Melampyrum americanum, Michx.	M. pratense, Muhl.
Ophrys estivalis, Michx.	O. spiralis, Muhl.
Chenopodium lanceolatum, Wild.	C. veride, Muhl.
Euphorbia peploides, Rafinesque.	E. peplus, Muhl.
Carpinus ostryoides, Raf.	C. ostrya, Michx. [Muhl.
Viburnum edule, Raf.	V. opulus, Michx. Muhl.
Rubus pubescens, Raf.	R. saxatile, Michx.
Lysimachia subcapitata, Raf.	L. thyrsiflora, Michx.
Gratiola lutea, Raf.	G. officinatis, Michx.
Galium aparinoides, Raf.	G. aparine, Muhl.
Callitriche spuria, Raf.	C. verna, Mich.

Among the plants found in North-America by the Europeans, when they arrived in it, a few, as *nicotiana tabacum*, *solanum tuberosum*, *convolvulus batatas*, *zea mays*, &c. did not grow spontaneously, but were merely cultivated by the native Americans, who probably had them from some of their neighbours, or brought them from other parts. These useful plants having never been found truly indigenous any where, their native soil remains still a problem to us, as is the case of most of our other cereal plants.

The Rev. Dr. Henry Muhlenberg, of Lancaster, in Pennsylvania, is almost the only author who has paid attention to the subject I am treating, and in his *Index Floræ Lancastriensis*, inserted in the third volume of the Transactions of the American Philosophical Society of Philadelphia, he has indicated the exotic plants which he found growing spontaneously in the neighbourhood of Lancaster. This sketch has been very useful to me, notwithstanding that he omitted a few, and that he mistook all the following ones for indigenous, while they appear to me evidently, naturalized exotics; as they never yet were found far from the habitations, in the remote woods, mountainous rocks, and similar places, where their seeds could not have been carried by the winds, men or animals. They are the

Plantago major,	Satureja hortensis,
Cynoglossum officinale,	Lamium amplexicaule,
Echium vulgare,	Leonurus cardiaca,
Verbascum blattaria,	Origanum vulgare,
Coriandrum sativum,	Myagrum sativum,

Pastinaca sativa,	Thlaspi bursa pastoris,
Chenopodium album,	Trifolium pratense,
Allium vineale,	——— arvense,
Ornithogalum umbellatum,	Sonchus oleraceus.
Nepeta cataria,	Arctium lappa,
Marrubium vulgare,	Anthemis cotula, &c.

Dr. Barton, professor of Botany, in Philadelphia, in his enquiry whether the common Bee is a native of North-America, likewise inserted in the third volume of the above-mentioned Transactions, has mentioned a few naturalized plants, such as *plantago major*, *chenopodium album*, *antirrhinum linaria*, *hypericum perforatum*, and *chrysanthemum leucanthemum;* but he erroneously thought the *verbascum thapsus and leontodon taraxacum* in the same case, as they are truly indigenous and found in the most remote places.

In the *Flora Boreali-Americana* of Andrew Michaux, scarcely any naturalized plants are mentioned as such, while some are enumerated which are really of that description, and ought therefore to have been distinguished from the remainder. These are

Blitum capitatum,	Nepeta cataria,
Ligustrum vulgare,	Euphrasia officinalis,
Convolvulus repens,	Trifolium arvense,
Verbascum blattaria,	Artemisia vulgaris,
Cucubalus behen,	&c. &c. &c.

There are some other plants, which are believed by some American Botanists to be naturalized. While for some the tradition, and for the others, the remote and wild places where they sometimes grow, should lead to the belief of a contrary opinion. I consider them as dubious, as they are likewise found, together with the naturalized plants, in the same situations and localities. Therefore it might be the case, that they are together native in some parts, and naturalized in some others. They are the following:

Anthoxanthum odoratum,	Rumex acetosella,
Anagallis phœnicea,	Erysimum officinale,
Convolvulus sepium,	Geranium columbinum,
Saponaria officinalis,	Polygonum aviculare,
Portulaca oleracea,	Holcus lanatus,
Achillea millefolium,	Xanthium Strumarium,
Chelidonium majus,	&c. &c. &c.

Lastly, the different states of the union have likewise ex-

changed their native productions and adopted several. It is particularly the southern ones that have furnished them to the northern ones; and they have received a few from the West-Indies, or other southern climates, but their number is very trifling in proportion of the European plants, that are in the same case; as the rigour of the winters kills most of those that would otherwise grow spontaneously.

All the naturalized plants I shall have occasion to point out, may be ranged in three series or lists, according as the motive and the mode their spreading was effected, viz. The first will contain the plants and trees which were brought to America on account of their utility, and sown or planted in the fields, meadows, orchards or hedges, where their seeds having accidentally fallen on the ground, begun to spring naturally, and next were dispersed by the means of men who involuntarily dropped them in the neighbourhood in transporting them, or of the winds which threw them at a distance, spreading in this manner in different places sometimes very distant from their first place of growth.

The second list may be composed of the garden plants, of show or less utility, which, carried from Europe into the American gardens, have, in the course of time, and by the above mentioned means propagated spontaneously in said gardens, or spread in their neighbourhood, but never at a great distance.

The third list may be formed with plants totally useless, whose seeds being accidentally mixed with those of the useful plants, have been sown together, and have spread naturally, as weeds, through the neglect of the husbandmen or gardeners.

Lastly, a fourth list might be added, containing all the plants of the Southern States and the West-Indies, which have spread naturally in the Middle States, situated on the Atlantic ocean, of which I am particularly treating; they are, New-York, Pennsylvania, New-Jersey, Delaware and Maryland. I shall enumerate under these four series all the plants I have to speak of, indicating after each the places and grounds where they grow, particularly those where I found them; and if they are yet rare or already common: their number amounts to above 250 species, and there are as many to be added to the Flora of the United States of America.

1st List or Series.

Plants introduced by agriculture, and growing spontaneously in several places.

Hordeum vulgare, distichum, } common—in several fields, roads, and fallow grounds: but few individuals.

Secale cereale—more common—and in the same places.

Triticum hybernum, æstivum, spelta, polonicum, turgidum, } few individuals in the same places: the last sorts more rare.

Festuca elatior, Avena elatior, } lately introduced into the meadows near Lancaster, and Wilmington in Delaware—rather rare.

sativa—common—in fields and fallow grounds.

Rubia tinctoria—rare, in some pastures and roads near Lancaster.

Plantago lanceolata—very common—in fields, meadows, &c.

Linum usitatissimum, Polygonum fagopyrum, } common—in the fields, roads, &c.

Prunus cerasus, domestica, } common—in the fields.

spinosa—rare—in some hedges and fields, in Maryland, New-Jersey, and Delaware,

Mespilus crus-galli, oxyacantha, } rather common—in some hedges, roads, and small woods.

Amygdalus persica—common—in some fields and woods.

Pyrus malus—very common—in the fields, and woods.

vulgaris, cydonia, } very rare—in do. do.

Trifolium pratense—very common—in the woods and fields.

melilotus officinalis—rare—in fields and roads in South Pennsylvania, and Maryland.

Medicago sativa—rare—in some fields of Maryland and Delaware.

Vicia faba, Pisum sativum, } rather common—in some fields and roads.

Morus alba, Corylus avellana, } rare—in some fields and woods.

Humulus lupulus—Westchester, Lancaster, in the hedges, &c.

Cannabis sativa—common—in the fields, roads, and cultivated grounds.

Holcus sorghum, saccharatum, } rare—near some towns and gardens.
Alopecurus pratensis—in meadows, fields, and roads.

2d List or Series.

Plants introduced by gardening, and growing spontaneously in the gardens, their neighbourhood, &c.

Blitum capitatum—near Lancaster and New-York—rare.
Ligustrum vulgare—rather abundant—in hedges and thickets, from Pennsylvania to New-England.
Phyllirea media—near Easton, Nazareth, Newark, &c.—rather rare.
Syringa vulgaris—rather common—in hedges, gardens, &c.
persica—in a wood, near Philadelphia.
Salvia officinalis, sclarea, horminum, } in the gardens: rare out of them.
Fedia olitoria—near Lancaster and Baltimore.
Iris pseudacorus, pumila, } near Philadelphia and Lancaster, in meadows—rare.
Crocus sativus—near Lancaster and New-York, in gardens and lawns—rare.
Panicum italicum—Philadelphia, Lancaster, gardens and roads.
Dipsacus fullonum—near Downington, Easton, &c. in the roads—rather common.
Scabiosa succisa, atropurpurea, } rare—near Wilmington, Lancaster, and Newark, in the roads, near houses.
Lycium europeum—near Philadelphia, Westchester, Lancaster, and Baltimore, in hedges and gardens—rare.
Lithospernum officinale—rare—near Lancaster, and Baltimore,
Cynoglossum officinale—common—in Delaware, Maryland and N. Jersey,
Symphytum officinale—near Philadelphia, Germantown and Lancaster,
Borrago officinale—near Philadelphia, New-York &c.—rather rare. } in roads and near houses.

Verbascum thapsoides—near Philadelphia, Germantown, &c. in some fields,

Primula veris—rare—in gardens, near Lancaster, Philadelphia, and New-York.

Solanum lycopersicon, dulcamara, } along roads, near gardens, at Germantown, &c.

Chironia centaureum—near Lancaster and Baltimore, along roads—rare.

Rhamnus catharticus,
Euonymus europeus,
Ribes rubrum,
grossularia,
nigrum,
Hedera helix,
Vinca minor,
Asclepias nigrum,
vincetoxicum,
Beta vulgaris,
cicla,
altissima,
} In Pennsylvania, &c. rather rare—near gardens, and along roads and hedges. Near Westchester.

Scandix cerefolium—near Trenton, New-York, &c.—rare—along roads.

Apium petroselinum,
graveolens,
Carum carvi,
Sanicula europea,
Coriandrum sativum,
Imperatoria ostruthium,
Ligusticum levisticum,
Heracleum sphondylium,
Anethum graveolens,
} rare—in some gardens or near them, mostly near Lancaster.

fœniculum—in Delaware, and Pennsylvania, near Bethlehem, along some roads.

Pastinaca sativa—rather common—in some fields, meadows, &c.

Sambucus nigra,
ebulus,
Allium cepa,
porrum,
sativum,
schenoprasum,
Narcissus poeticus,
jonquilla,
} rare—in gardens, or near them.

Asparagus officinalis—common—in fields, along roads.
Ornithogalum umbellatum—common—in some parts of New-Jersey and Delaware, near Lancaster, &c. in fields, meadows and gardens.
Hyacinthus botryoides—found near Germantown, in a meadow.
Hemerocallis fulva—rather common—near Germantown, Lancaster, Baltimore, &c. in fields.

Hemerocallis flava,
Erythronium dens canis,
Tulipa sylvestris,
gesneriana,
Fritillaria imperialis,
Lilium candidum,
bulbiferum,
pomponium,
} rare—in gardens, very seldom out of them.

Rumex patientia,
acetosa,
} rare—along roads, near Philadelphia, Baltimore and Lancaster.

Polygonum orientale—near Lancaster and Trenton: but rather common.
Ruta graveolens—rare—near Philadelphia, and New-York, in or near gardens.
Dianthus armeria—found in a meadow, in New-Jersey.
Cucubalus behen—near Lancaster, Westchester, (Quebec.)
Silene noctiflora—in fields, &c.
armeria—found near Wilmington, Havre de Grace, in fields.
Agrostema cronarium—near Wilmington, Washington, &c. along roads.

Rosa alba,
gallica,
centifolia,
Rubus idæus,
} near Lancaster, Bethlehem, New-York, &c.
Papaver rhæas
somniferum,
} near Easton, Wilmington, &c.
Aquilegia vulgaris—in Delaware, near Lanc. and Washington,
Nigella sativa,
damascena,
} near Germantown, Lancaster, &c.
Helleborus hyemalis,
viridis
} near do. do. and Baltimore,
} rare—near gardens, or along roads.

Adonis autumnalis—rare—in fields, near Lancaster, Havre, Baltimore, &c.

Nepeta cataria,
Marrubium vulgare,
Glechoma hederacea, } common—along roads and near houses.

Mentha piperita—near Lancaster, Reading, &c. in meadows

sativa,
Hyssopus officinalis,
Lamium album, } and moist places. rare—near gardens, at Lancaster, Philadelphia, Germantown, &c.

amplexicaule—every where in Maryland, } common—in fields, roads and gardens.

Melissa nepeta—

officinalis,
Euphrasia officinalis,
Satureja hortensis,
Thymus vulgaris, } rare—near gardens, in Pennsylvania.

serpyllum,
Clinopodium vulgare,
Leonurus cardiaca, } common—in several fields, roads, towns, &c. in Pennsylvania, Maryland, &c.

Mollucella levis—near Annapolis, rare—in fields and roads.

spinosa—rare—near Lancaster.

Ocymum basilicum—rare—near Lancaster, Baltimore and Bethlehem.

Ballota nigra—near Westchester, Lancaster, &c. near houses.

Lepidium sativum,
Myagrum sativum,
Cochlearia armoracia, } in Delaware and near Lancaster, do. do in New-Jersey, & do. } rare—near gardens.

Erysimum barbarea—near Lancaster and Burlington, in fields, &c.

Sisymbrium nasturtium—near Lancaster, in moist places —rare.

Sinapis alba,
nigra, } rather common—near Lancaster, Newark, &c. and in Delaware, near houses.

Raphanus sativus,
Brassica oleracea,
napus,
rapa, } rare—in some fields near Philadelphia, Lancaster, Baltimore, Wilmington, &c.

Malva crispa—found near Germantown, along a road.

Althæa officinalis,
Alcea rosea, } rather rare—near Philadel. N. York, Baltimore, Lan. and in cultivated grounds.

Fumaria officinalis—near Wilmington and Lancaster, rare —in do.

Spartium scoparium—found between Baltimore and Annapolis.

Vicia faba,
Pisum sativum, } rather common—in fields.

Tragopogon porrifolium—found near Chestertown and Lancaster—rare.

Lactuca sativa,
Scorzonera hispanica,
Cichorium endivia,
} rare—near habitations.

intybus—very common—in fields, roads, cultivated grounds, &c.

Tussilago farfara—found near Westchester.

Carthamus tinctorius—rare—near Lancaster.

Zinnia multiflora—rare—near Philadelphia, Lancaster, Baltimore, &c.

Inula helenium,
Tanacetum vulgare,
Anthemis cotula,
} common—in fields, roads, &c.

nobilis—rare—near Lancaster, Philadelphia, Baltimore, &c.

Artemisia vulgaris—rather rare—in Pennsylvania and Maryland, fields, roads, &c.

dracunculus—near Germantown, roads, gardens.

abrotanum,
absinthium,
} rare—near Lancaster and Baltimore.

Calendula officinalis—near Philadelphia, New-York, &c.

Matricaria parthenium,
camomilla,
} near Lancaster, New-York, &c.

Impatiens balsamina,
Viola odorata,
tricolor,
} rare—near Philadelphia, and Lancaster, in cultivated grounds.

Buxus sempervirens,
Morus alba,
Corylus avellana,
} rare—in Pennsylv. near habitations.

Euphorbia lathyrus,
Cucurbita lagenaria,
pepo,
melopepo,
citrullus,
verrucosus,
Cucumis sativus,
} near habitations, along roads, &c.

Salix alba,
vitellina,
caprea,
viminalis,
} rare—in Pennsylvania, in fields, roads, &c. the two first near the waters.

Spinacia oleracea—rare—near Baltimore and Lancaster, in fields.

Juniperus sabina—rare—near Lancaster.
communis—common—in fields, roads, and even woods.
Populus dilatata, (of Aiton)—common—in roads, &c.
Atriplex hortensis—rare—near Lancaster and Baltimore.

Viburnum opulus,
Hyacinthus orientalis,
muscari,
Tropœolum majus,
minus,
Rheum rhaponticum,
rhabarbum,
hybridum,
Saponaria vaccaria,
Sedum thelephium,
Sempervivum tectorum,
Pæonia officinalis,
Betonica officinalis,
Origanum majorana,
Dracocephalum moldavicum,
Digitalis purpurea,
Malva parviflora,
Phaseolus vulgaris,
alatus,
nanus,
Vicia pisiforme,
Cicer arietinum,
Glycyrhiza glabra,

} rare—near some villages: and in gardens, or their neighbourhood.

3d List or Series.

Useless plants or weeds, accidentally introduced.

Verbena officinalis—common—in fields, roads, &c.

Bromus secalinus,
tectorum,
Avena nuda,

} rare—in roads, &c. near Lancaster.

Lolium perenne,
temulentum,

} common—in fields, meadows and roads.

Lithospermum arvense—common—in fields, &c.
Cuscuta europea—near Baltimore, Lancaster, in gardens, fields, &c.
Plantago major—common—in fields, &c.
Echium vulgare—common—near Washington, Baltimore, Lancaster, in fields, roads, &c.

Verbascum blattaria,
Convolvulus arvensis, } very common—in fields and roads.

Chenopodium polyspermum,
rhombifolium,
album,
rubrum, } rather common—in fields, roads, and near houses.

Hyoscyamus niger— rare—near Annapolis and Lancaster.

Buplerum rotundifolium—rare—near Lancaster.

Daucus carotta,
Allium vineale,
Rumex obtusifolius,
acutifolius, } common—in fields and roads: the two last near waters.

Spergula arvensis—common—particularly in Delaware and New-Jersey, in flax fields.

Agrostema githago—common—in cultivated fields.

Lythrum hissopifolium—rare—in roads, near Lancaster and Bethlehem.

Delphinium consolida—rather common—in cultivated fields.

Ranunculus bulbosus,
sceleratus, } rather common—in meadows and moist grounds.

Lamium amplexicaule—common—in fields, gardens, and roads.

Melissa nepeta,
Clinopodium vulgare,
Leonurus cardiaca,
Antirrhinum linaria, } common—in fields, roads, &c. the first in Maryland.

elatine,
cymbalaria, } rare—in fields: the last in Delaware.

Alyssum vesicaria—in Delaware, in flax fields.

Thlaspi bursa pastoris,
Malva Sylvestris,
rotundifolia,
Trifolium arvense,
agrarium, } common—in fields, roads, &c. the last in Maryland.

Medicago lupulina—rare—near Philadelphia and Trenton, in meadows.

Hypericum perforatum,
Sonchus oleraceus,
Carduus lanceolatus,
Lappa bardana, } common—in fields, roads, and near houses, &c.

Centaurea jacea,
benedicta,
calcitrapa, } rare—in Pennsylvania and Maryland, in roads and cultivated grounds.

cyanus—rather common—in some fields.

Senecio vulgaris—rare—near houses.
Chrysanthemum leucanthemum, } very common—in fields,
Urtica dioica, } roads and near houses.
Euphorbia helioscopia, } rather rare—near roads and
chamesice, } houses.
Xanthium Strumarium—near waters.

4th List or Appendix.

Exotic plants, not native of Europe.

N. B. This Sign + means they were introduced by Agriculture.
This × by gardening,
and this || accidentally.

× Salvia coccinea—from Florida: found near West Chester.
× Coix Lacryma—from West-Indies—near Lancaster.
+ Convolvulus battatas—in fields—in New-Jersey and Delaware.
× purpureus—near Philadelphia and Baltimore.
× Mirabilis dichotoma—in Pennsylvania, Maryland and Delaware.
+ Nicotiana tabacum—in New-Jersey and Maryland, in fields.
× Capsicum annuum—rare—near Lancaster.
+ Solanum tuberosum—common—in fields, &c.
× Celoria cristata—near Germantown and Baltimore.
× Yucca filamentosa—from the Southern States: found in Delaware and near Havre de Grace.
× Prunus chicasa— do. rare—near Germantown, West Chester, &c.
× Cleome pentaphylla—rare—near Philadelphia.
× Halesia tetraptra—from the Southern States, near Baltimore.
+ Gossypium herbaceum—near the towns, in cultivated grounds.
|| Alcea filifolia—rare—near Lancaster.
× Hibiscus esculentus—rare—near Philadelphia.
|| trionum— do. do.
× syriacus—near Lancaster, New-York, and Baltimore.

× Helianthus annuus—from South America—near Germantown, Lancaster, &c. in roads.
× Ricinus communis—from West-Indies—rather common.
× Bozea yervamora—from West-Indies—near New-York.
‖ Amaranthus spinosus, } from the Southern States—rather common—in roads, &c.
‖ albus, }
× Gleditsia triacanthos, } from the Southern States—rather common—in roads, fields, and some woods.
× Bignonia catalpa, }
× radicans—found near Philadelphia, Baltimore and Lancaster.
× Aralia spinosa—found near Philadelphia, West Chester, Lancaster, &c. in roads.
× Zanthorhiza tinctoria, } from do.—near Philad. Havre de Grace—near gardens.
× Calycanthus floridus, } from do. do. do.
× Phaseolus coccineus—near Germantown.
× Robinia hispida, } from the Southern States—near Philadelphia—in houses and gardens.
× viscosa, }
× Thuja occidentalis—from Canada—near Philadelphia, &c.
+ Zea mays—common—in cultivated grounds.

Professor Middleton's Letter *on the* Croup.

IN our vol. 12, p. 331—339, we republished Mr. Bayley's scarce tract on the Croup. It is entitled "Cases of Angina Trachealis, with the mode of cure: in a letter to William Hunter, M. D. &c. &c. By Richard Bayley, Surgeon." It was printed at New-York, by Hugh Gaine, in 1781. But in the copy which we procured at that time, and the only one we could then procure, two pages were wanting. This deficiency we have since been enabled to supply, by the kindness of Mr. Moses Lyttell, who obligingly presented to Dr. Mitchill an entire pamphlet, which he accidentally found on a haberdasher's stall. The chasm, in our former publication, vol. 12, p. 338, we here fill up, with the author's own words. And with the addition of these, the tract of Mr. B. will be complete. At the end of the 24th line, add the following: * * * * * * * * * * * *

"glary matter with some mucus, which was said to have been exceedingly offensive when first thrown up; but when I saw it,

(fourteen hours afterwards) it had scarcely any, and no offensive smell. The child at this time was in a great measure recovered, the hoarse sound scarcely perceptible, the cough very little troublesome and without fever. From this date the symptoms grew more and more favourable, and by a continuance of the same treatment the child perfectly recovered.

" When the angina trachealis is theoretically considered, there will probably be formed (as is generally the case when facts are not ascertained) opinions as various as the information and different faculties of men may suggest—I am induced to adopt the following :

" That the larynx, aspera arteria, and bronchial pipes have one common membrane, which we are informed by injection consists of little more than an infinity of blood-vessels, and consequently liable *to inflammation*, as all vascular parts are. An increased action of these vessels, (as in pleuritic and puerperal fevers) occasions a preternatural secretion of lymph, which from the ingress and egress of the air becomes condensed, and assumes the appearance of a membrane, and its compactness will depend on the age and habit of the patient, and the state of the atmosphere.

" The common opinion is, that those who die of this complaint, are suffocated by the membrane's closing the windpipe. Another more respectable opinion is, that a spasm of the muscles of the larynx closes the scene. The circumstances which precede *death* in this disease, compared with those appearances which have regularly taken place in the cases which I have seen *successfully* treated, sufficiently explain the cause of the patient's death from the laws of the blood's circulation. To preserve the healthful state of an animal, it is necessary that the whole mass of blood should circulate through the lungs in a given time, and the free admission and expulsion of air contributes to this regular process: the change also, which gradually takes place in the lungs, seems more directly to account for the swelled face, tumid jugulars, and the full staring eyes, which are symptoms that accompany the progress of this complaint; and add to this, the larynx, aspera arteria and bronchia have been found pervious in every subject I have dissected, while the ramifications have been as regularly filled with a glary mucus.

" From what precedes it is obvious, that the angina trachealis is considered as an *inflammatory disease*, the treatment of which must vary in every degree according to its violence : and though the common antiphlogistic treatment

will in some cases relieve, if early applied, yet the most desperate may yield to *repeated bleedings ad deliquium* from the jugulars, the free use of *tartar emetic* and other evacuants, with a *large blister* covering the *larynx* and *aspera arteria*, while the mucus filling up the ramifications of the bronchia may be emptied by the action of vomiting."

At the same time, we recovered another document, which had become equally rare. This is

A Letter from PETER MIDDLETON, *M. D. to Mr.* RICHARD BAYLEY, *on the* CROUP, *dated New-York, Nov.* 30, 1780.

DEAR SIR,

IN consequence of our late conversation on the subject of the angina suffocativa, or croup, as we call it in Scotland, and here vulgarly called, but very improperly, the sore throat distemper; I have recollected a few cases in that disorder where some died of it, and where I was indulged with an opportunity of examining a few bodies.

When I first came to this city, in 1752, I found complaints of the throat not unfrequent; but most of them were usually considered as having a malignant tendency, if not actually anginæ gangrenosæ; and in consequence of this general belief, antiseptics were the remedies used in preference to all evacuants, except perhaps emetics. Being a stranger to the climate and its diseases, I for some time acquiesced in these notions, which I found prevailed equally among the inhabitants, and the Practitioners in Physic of the first reputation. The first opportunity I had of being convinced that the diseases of the throat had not been properly distinguished, was in the case of a black child of about twenty months old, belonging to George Harrison, Esq; where I was called in consultation. The child was lusty and strong, had the usual appearances of swelled tonsils and inflamed fauces, with fever; the throat could not be minutely examined. I proposed V. S. Jug. but from the prevailing prejudice, it was not agreed to. The child died. With much solicitation I was permitted to dissect the throat, when there issued from the neighbouring vessels such a quantity of blood as amazed the bye-standers, as well as myself. No ulcers were to be seen, nor any remarkable lividity; but the glands so much tumified as to have occasioned the child's death by suffocation. My advice in this case however did not pass unnoticed; for soon afterwards a daughter of the

Reverend Dr. Auchmuty, being seized with a similar complaint in her throat, I was immediately desired to prescribe for her, V. S. Jug. freely, and with a very little other medicine she got perfectly well. This last case I particularly mention, because the young lady as well as the family have frequently since, with much satisfaction, reminded me of the circumstance of opening the black child, and of my bleeding her in consequence thereof in the jugular. I recollect two other singular cases of tumified glands and sore throats, both of them of young men; where, though there were symptoms of imposthumation, the danger of suffocation was so alarming that, in the first case my assistants declining the task, I made an opening with a lancet-pointed scalpel through the velum pendulum into the thickest part of the tumor and thereby discharged a large quantity of highly fœtid matter: The other young man being my own patient was treated in the same manner; and both got well very soon. Some force was necessary to open the mouth sufficiently: but pain and peril made them very submissive. I have in many similar cases succeeded in bursting these imposthumations in the throat by giving concealed emetics, when I imagined they were near the surface or breaking; and where the patients were averse to such a remedy.

I come now to the most interesting and more immediate subject of your inquiries; and be assured I have great pleasure in gratifying you in a matter so interesting to society. Anthony, the son of James Duane, Esq. of a lively active disposition, and about three years of age, was, in the end of December, 1770, taken with the symptoms of the croup, or angina suffocativa. Being no stranger to the disorder, and the parents reposing all confidence in me, I blooded him freely in the neck; afterwards he was blistered, and used evacuants freely, which with some topical applications to his thorax and throat effectually restored him to health, in the following month. In February following, his sister Sally was seized with the same disorder, and agreeable to the popular prejudice she was supposed to have caught it as the phrase is, or to have been infected by her brother. She was of a very delicate puny constitution; and her disorder soon becoming serious, I was from the tenderness of the mother prevented from blooding her till it was too late to attempt it; and also by other assistants called in, who preferred treating her with large doses of calomel, and an electuary ex Pulv. Rad. Senec. & Serp. agreeable to the

prevailing opinion of its being a *sore throat distemper*, and of a malignant putrid nature. She fell a victim to the disease. As she was a favourite patient, I was very attentive to her symptoms. I observed her inspiration was very laborious and longer than her expiration, which seemed to be without any effort; that the whizzing noise was generally made during inspiration, unless when she coughed; and that she seemed to articulate or answer questions more easily while inspiring, in the last stages, than while expiring. Having permission to examine the body, I found no remarkable tumefaction of the glands of the throat, nor lividity, nor was there the vestige of an ulcer. There were a few whitish spots of irregular figures in different places of the fauces, which adhered to the mucus, and which easily came off. On opening the larynx and trachea I found the trachea lined nearly down from the larynx to the first division of the bronchiæ with a whitish circular membrane about the thickness of very fine white paper, adhering to the trachea by a viscid mucus underneath, by means of which there was some space between it and the trachea: the grand bronchial divisions were filled with this mucus. The white specks discovered in the fauces and larynx were pieces detached from the top of this membrane, which was jagged and irregular next the larynx. Nothing remarkable in the lungs, except their being much infarcted with blood. It would be unnecessary to be very particular as to the other bodies I examined; as nothing occurred to my observation then, or since, which has induced me to change my opinion respecting the nature of the croup, or angina suffocativa, which I apprehend to proceed from a preternatural flow or discharge of mucus from the glands and vessels within side the trachea, that by the repeated transit of the air in respiration is gradually thickened, and at last condensed into that paper-like form, and which when formed is difficult to remove, and constitutes, not the least part of the danger. This disease is totally distinct from the malignant sore throat; it is not of itself of a nature malignant or infectious, as the putrid sore throat may often be. And though I will not presume to say that it never is complicated with the malignant sore throat, I can freely declare, that, of the many cases I have attended, I never met with one instance where they were conjoined. Just before my present indisposition I had a case of the croup. A black child belonging to the Hon. Henry White, Esq. had all the approaching

symptoms, as fever, hoarseness, restlessness, particular rusty noise in coughing, and difficult inspiration. By immediately blooding freely in the jugular, applying a blister over the throat from ear to ear, and other evacuants as they were indicated, the child got well before it was known to have been in danger. If my approbation of your method of treating this dangerous disorder for some time past has any weight, you are at liberty to make what use you please of this letter, as we don't seem to differ much in sentiment, either as to that, or about the nature of the disorder.

I am, dear sir, affectionately yours,

PETER MIDDLETON.

Mr. RICHARD BAYLEY, Surgeon,
New-York.

Observations on the decay of FRUIT TREES, *and on lean and shrivelled fruit: In a Letter from* WILLIAM SMITH, *D. D. to* DR. MITCHILL, *dated Norwalk, (Conn.) Oct.* 10, 1810. *(With natural specimens.)*

[Some fruit of a peach-tree had been exhibited in New-York, remarkably destitute of pulp, juice and flavour. Some resemblance was traced between its external form, and that of a hickory-nut. The skin was supposed to be coloured and cracked after the manner of the shag-bark-husk. This led to a belief among some, that the fruit of this peach-tree was a mongrel production; and that the staminal dust of the walnut must have produced the peculiar and extraordinary changes in it. The Rev. Dr. Smith has inquired into the facts like a philosopher, and shown the improbability of such an occurrence. At the same time he has assigned much more satisfactory reasons for the appearances.]

DESIROUS of visiting a peach-tree in the orchard of Mr. Moses Hanford, Canaan, of whose fruit I had heard when in New-York, last week, a marvellous account; in company with the Rev. Henry Whitlock, Rector of St. Paul's Church in this place, I spent about two hours yesterday forenoon in making every observation, and putting every question to the owner of it that curiosity could suggest.

As to the peach-tree's local situation.

It stands at the N. W. corner of an orchard, consisting of

apple-trees and peach-trees irregularly planted, and promiscuously mixing, in several instances, their branches one with another. The apple-trees are all of the common sort, and appear healthy, and loaded with fruit, generally sweet apples. The peach-trees bore abundance of yellow and whitish peaches. The tree in question is no fortuitous growth, it has been *planted*, as it forms a straight line with two other trees of the same kind, in a parallel, about 16 inches from the stone fence. It is accompanied by three peach-trees, of which one is about 2 inches in diameter larger, and the other two about one fourth in diameter less than it, whose diameter is about eight inches. These four trees originate from separate roots, the two larger ones are about three feet apart, each of them being attended by a small one as its satellite, at the distance of 4 or 5 inches. All of these trees send their branches in mixed confusion over the fence, and to a cursory observer on the public road, (which for some rods runs parallel to the fence) they would seem to be ramifications from one common radix. Their proximity to one another has occasioned the report that peaches and nuts were found upon the same tree. They are distinct trees, as I ascertained by opening the ground around them.

The four trees stand thus:

Highway. - - - - - - - - - - - -

NW. The orchard fence. S.E.

60 ft. from tree, diam. 8 O 3 ft. O 8

O 10 5 O 4 O

Tree, diam. 10, bears yellow peaches.

Tree, its satellite, 5 inches distant, bears a white peach.

Satellite to the diam. 8, has never produced any peaches.

All these trees, at the first glance, seem to be in the same state of verdure and viridity; but, upon a nearer examination, the tree, diam. 8, exhibits numerous marks of insect incisions, frequent exudations of gum, an uncommon hardness in the serræ of its leaves, and the filaments of the exterior bark.

O Large walnut-tree about 60 or 65 feet high, with spreading branches, and loaded with kiskatomases.

No. 1 is a specimen of this tree with its fruit; very little of which was remaining upon it when I saw it. The fruit but

little exceeded the size of a green walnut,—as the owner told me, and as it was encircled with two surrounding indented lines, as the walnut is, it was supposed to have derived this type of similitude from its vicinity to the walnut-tree above alluded to: but this could not have been the case, as the time of the flossification of peach-trees is several weeks anterior to that of walnut-trees—and had a north-wester blown the farina of the walnut-tree ever so powerfully and plentifully over the peach-tree, the period of impregnation must have been too long passed to admit the supposition of its having any germinal influence. Besides, the peach-tree, diameter 10, is 3 feet nearer to said walnut-tree, and of consequence more exposed to the supposed farinaceous shower, but instead of being affected by it, a load of yellow peaches bear testimony that little credit is due to the doctrine of Dr. Darwin's *Amores Arborum*. Hitherto I had forgot to mention that this supposed Persica-nux tree was in the habit of yielding yellow peaches like its companion; and that even last spring, its blossoms had no discriminating marks to excite attention. No. 2 is a branch with similar shrivelled fruit taken from a tree of the same kind (viz. apricot) located about 100 yards from the former on rising ground, its roots bare of earth, the sandy earth being very much washed away to the distance generally of from 3 to 6 or 7 feet all around. This tree (without being much taken notice of) has produced for 3 years past an increasing-shrivelled fruit every year, but the quantity less and less each time of bearing. Parcel, No. 3 contains some of the fruit and bark. It is evident that this tree is far gone in disease, induced by the injections of some insect. The protuberances, though large and very frequent, especially on the larger branches, are not half so remarkable as the deep vallies in the wood under them; some of these vallies measured 6 inches in length and about $1\frac{1}{2}$ inches in breadth, terminating at the bottom in a line of about $1\frac{1}{2}$ inches below the circumference of the bark. Not having a glass, I could not make the observations which I desired, but with the eye, I could discover clusters of vermiculi in some of the vallies, and in others a black viscous substance, which I took to be animalcula. These masses of black matter smelt stronger than the common bark-juice usually does; this might be owing to its highly excited state of fermentation; and they were all nearly in the same state, which warrants the supposition that they were all produced by some synchronous cause.

Abundance of green, yellow, and brownish moss is upon the upper branches of this tree, but I could discover none upon the other one: a circumstance which indicates their different stages of dissolution: the present being to the latter the first year of animal infection, and to the other the third year.

Upon enquiry yesterday among some of my neighbours, I found, that for three years past, an increasing decay has affected several peach-trees, particularly the apricot and nectarine-trees; some of which bore their fruit till it arrived at the size of a walnut, and it then shrivelled and dried up. Others shrivelled at an earlier period: the leaves continuing of the same colour as those which brought their fruit to perfection. In the garden, which is attached to the house which I at present occupy, a nectarine, of about 7 or 8 years old blossomed kindly, but its fruit, when somewhat less than a walnut, shrivelled up, and fell off little by little; and since, its leaves have withered: the branches are now quite dry; but this I ascribe to its too near vicinity to a barn. But this could not be the real cause; as two peach-trees in the same range, and equally near to the barn, yielded a considerable quantity of fruit.

Upon the whole, sir, I am of the opinion that some fly, to which the apricot and nectarine-trees are more accessible than others, injects its eggs or semina, which contaminate the juices of the tree so powerfully as to stop the fructification, at an earlier or later stage, according to the strength of the trees; and that similar consequences to the whole tribe of Persicæ nuces are to be apprehended, as has befallen the whole family of plums. If so, this will be a most grievous calamity, and much to be deprecated. No. 4 contains two branches of a plum-tree from a neighbouring orchard. One of the branches is in its incipient state, with but the commencement of disease, the other is far gone in the vermicular consumption.

I think it a matter worthy of hortolan philosophy, to examine those excrescences of the apricot and plum-tree, at different successive periods throughout the year, in order to ascertain some antidote for this growing evil. But, upon second thoughts, as philosophical medicines have generally more of speculation in them than effectual cure, I would recommend the application of *fire*, that sovereign detergent, to burn every tree so affected both *root* and *branch*. No re-

medy has yet been discovered for the excision of the insect, called erroneously the Hessian fly, which for years had depopulated numberless fields of wheat, but *starvation*, that is, a discontinuing the sowing of wheat for some years, until their seminal and vermicular forms ceased to exist. Whoever destroyed any of the caterpillar tribes by burning their nests? Innumerable animalcula, during the hot months particularly, float in the air; and according to incalculable contingencies of elementary agency, and the bodies on which they fall, they will assume to us visible but daily varying forms; and their operation will be equally various. But this idea is quite remote from that of equivocal generation.

On these subjects, you may justly say, that I have written plurima verba but minimæ res: true; but these minimæ res excite philosophic attention, and I wished to give you all the information I possibly could on a subject, which, by a letter of yours to——I perceived had excited your curiosity. I shall be pleased, if your patience can hold out to the end of this long epistle, and that you will inform me that it has, by letter addressed to me at this place, will be gratifying to

Dear Sir,

Your's with respect and esteem,

WILLIAM SMITH.

REVIEW.

Observations on ACIDIFICATION *and* COMBUSTION: *with a new theory of those* PROCESSES, *founded on the conjunction of the phlogistic and antiphlogistic doctrines. By* JOHN REDMAN COXE, *M. D. Professor of Chemistry, in the University of Pennsylvania.* 8vo. pp. 50. Philadelphia. Carr. 1811.

IN exercising the right of private judgment and opinion, differences arise on physical, as well as moral subjects. The abstruse and inexplicable nature of matter has afforded numberless topics of discussion and dispute to those who have attempted an explanation of its internal constitution and properties. The chemists, who have pryed into these mysteries with the greatest boldness, have therefore discoursed, with a corresponding freedom, about the attractions and repulsions which they supposed to exist among the corpuscles or atoms of bodies. In their communications, they did not confine themselves to facts: they embellished their narratives with opinions: they found doctrine incomparably more easy than practice: they filled up the chasms of observation by conjecture; and in the impatience which they felt to generalize, they founded hypotheses upon partial and dubious premises, instead of building theory upon a full and indisputable induction.

In no department did this disposition of the mind tincture and mar the progress of investigation more than in the attempts which were made to explain the phenomena of fire. That bodies of a certain class should, under definite circumstances grow warm, emit heat and light, exhibit flame, undergo a total change of qualities, and, while some of the new products should ascend in vapour through the chimney, others of them should remain fixed upon the hearth, are, indeed, occurrences of the most familiar kind. They are, however, not the less curious to the scientific inquirer on that account; though the commonness of the appearances, wonderful as they are, may excite in ordinary beholders no more

thought than is usually experienced from the view of the solar system, and of the starry firmament beyond it.

The changes which natural bodies undergo by fire, engaged at an early day the attention of a few philosophers. They observed that this agent was employed in the work of disorganization: and that such organized bodies as were not destroyed by fire, were doomed to perish by putrefaction. They could not fail to remark, that these are the two great operations by which the defunct remains of vegetables and animals are decomposed—excessive accumulation of them prevented —the face of the earth cleared of the incumbrance they would cause—room made for new races to spring up; and a great number of admirable processes wrought, in bringing about such prodigious alterations.

One of the most common appearances exhibited by a burning substance was FLAME. This hovered over the consuming solid, or rather, seemed to be an ignited vapour proceeding from it. The process was thence called *inflammation;* and the class of things capable of undergoing this operation was denominated *inflammable.* Nothing was more obvious than the supposition and belief that an appearance which characterized such a numerous order of beings depended upon a principle common to them all. Indeed, such a conclusion was not only reasonable, but almost unavoidable. It might be called a dictate of common sense. Accordingly, this element, which was supposed to inhere in all inflammable subtances, and to endow them with their peculiar qualities, was called the *principle of inflammability.*

Such a fair conclusion, drawn from so broad a survey of facts and analogies, could not be easily overturned. It required the exertion of uncommon talents to work its overthrow. To prepare the way for such an event, it was necessary that the object should be rendered ridiculous. This effect was produced, partly by the exaggeration of its friends, and partly by the detraction of its foes. Although ridicule is not the test of truth, yet such an adversary is always formidable, and not unfrequently victorious. It has been observed, that the virtue of Socrates was invulnerable until it was attacked by ridicule. So it may be remarked, that the stability of Phlogiston was unshaken, until assailed by the same enemy. The misplaced eulogies of JUNCKER, (Conspectus Chemiæ Theoretico-Practicæ e dogmatibus Becheri et Stahlii, &c. Halæ Magd. 1730) were almost as disastrous as the far-

fetched objections of LUBBOCK, (De Principio Sorbili p. 4, 5, 6, &c.)

But, it was not enough that phlogiston should have been made ridiculous. Its opponents succeeded in attaching to it a sort of odium. The way was thus prepared to work its downfall and root it out entirely. This last act was achieved by proscribing its name, and forbidding it to be employed among scientific men. Its title, like that of the clan of the Macgregors, seemed worthy of legal abolition. And Hydrogen was the new appellation, succeeding the former as legitimately as Constantinople took the place of Byzantium. The memoir of Mr. Fourcroy and his associates, on the method of a new nomenclature, and the corresponding table of names and terms, consummated this extraordinary work at Paris, in the year 1787.

After the promulgation of this scientific bull, the learned world was quickly awed to silence. To aid this grand revolution, the influence of the high and mighty was exerted to render the adherence to phlogiston, *unfashionable*. The lustre of names, and the splendour of talents, were embodied on the side of the neologists; and something worse than ignorance and obstinacy, was imputed to those who were sceptical, on a point where implicit faith and submission were required. The old dynasty of phlogiston was terminated; and the recent house of hydrogen was exalted to power. A new distribution of honours and rewards drew along the proselyted multitude; and the number of persons was exceedingly small, who had independence and self-possession enough to remain true to their native allegiance.

Nevertheless, some resistance was made. It was however just enough to demonstrate the sway of the revolutionists, who subdued one opposition after another, until almost all Europe bowed obedience. Some of the phlogistic partizans, after having made a gallant defence, ingloriously gave up the contest and submitted. Such was KIRWAN, who after having almost subdued his adversary, (Essay on Phlogiston) laid down his arms. And such also was HIGGINS, (Comparative View of Phlogistic and Antiphlogistic Theories) who came so near to victory that one wonders how he missed it.

A few held out to the last. Fulhame ingeniously contended (Essay on Combustion) that both the phlogistic and

antiphlogistic hypotheses were erroneous. And Priestley, with great force, though with an inferiority of skill, stood almost alone and quite undaunted, against the combined efforts of the new school; contending a phlogiston existed in nature, that it produced extensive effects in the composition and resolution of bodies, and that chemical theory was lame and imperfect without it. (The Doctrine of Phlogiston Established, &c.)

For ourselves, though we never doubted the importance and general correctness of the Lavoiserian doctrine, we never gave to it our unlimited and unqualified assent. Our work bears record in several places, of our disagreement with the prevailing and fashionable notions. We shall refer to some of these. In the first Hexade of the Medical Repository, vol. 1, was published, in 1797, the controversy between an illustrious English emigrant, and a French minister plenipotentiary; as well as an attempt to accommodate the disputes among the chemists concerning phlogiston. In this latter, the compound nature of sulphur, phosphorus, and the metals is affirmed; as consisting of phlogiston united to peculiar bases. In vol. 2, p. 51, a reform of the nomenclature is proposed, whereby hydrogen is to be expunged, and phlogiston admitted into its place. All the corresponding terms, from this radical word, are made to conform; and phlogistic, phlogistous, phlogisture, &c. are offered to the chemical world. In the same volume are contained seven of the letters which Dr. Priestley wrote in vindication of the phlogistic doctrine, and which contain many important facts and considerations. Vol. 3, contains his three replies to his antiphlogistic opponents, and a review of his pamphlet on the establishment of the doctrine of phlogiston, and the refutation of the composition of water. Further evidence on this subject is stated in vol. 4, p. 388. In vol. 5, p. 463 and 474, is contained the correspondence in 1802, with the secretary of the treasury, upon the employment of disengaged inflammable air, gas lights, and thermolamps for light-houses along the coasts to direct mariners. Herein is examined the nature of flame or blaze, as being a burning air, or phlogistous gas on fire.

Again, in our Hexade 3, vol. 1, p. 289, is a summary of the phlogistic controversy as revived in consequence of the experiments lately made in England and France, favourable to its existence. This view is continued in vol. 2, p. 84, in

consequence of additional developements in support of phlogiston, and enlarged and applied to the new phenomena, at p. 185. Information equally novel and interesting, on the same subject, was published p. 304 and seq.

After a contest sustained for a term longer than the siege of Troy, with as much ability as we possessed, and with more success than could have been reasonably anticipated, we had imagined the field would have been soon yielded without further vehemence of struggle. The compound nature of the metals and inflammables, seems to stand upon the evidence of experiments. The proof is equally strong that phlogiston, or the base of inflammable air, is one of the ingredients. These conclusions at once establish the doctrine of an inflammable principle, and contradict the simplicity ascribed to the bodies of which it is a part. And although fresh hands come and labour in this vineyard of science at the eleventh hour, they are welcome, even as those who have borne the burden and heat of the day.

Professor Coxe undertakes, in the performance before us, to give a theory of combustion and acidification, by a combination of the two doctrines. He has presented an ingenious and striking view of the subject. Yet his statement would appear to us more correct and methodical if he had used the word *inflammation*, instead of *combustion*. The former would express the fiery process which is accompanied by flame; the latter such as takes place without it. To give an example of our meaning, it may be stated, that paper and straw are inflammable bodies, because they exhibit flame while they burn: but agaric and spunk, which it is impossible to kindle into flame, are combustible bodies. In the former, phlogiston exists in a form easy of separation, and of taking fire as a gas; while the latter, consisting mostly of carbone, which is not so readily volatilized, retains its firmness or compactness until the moment of consumption. So in the wood commonly employed for fuel both phlogiston and carbone abound. During the extrication of the phlogiston, the process is accompanied by flame; but after this has wholly escaped, the carbone no longer exhibits that appearance, but burns as a solid coal. A corn-cob of maize is a good example of this; for when it is first put into the fire it blazes readily, but after it has burned to a coal, it is almost impossible to excite it into a flame sufficient to light a candle. Phlogiston, therefore, is not essential to the burning of

a body, or to its being changed by fire; since some combustible substances are merely and almost purely carbonic; and others, that originally contained phlogiston, may lose the greater part or the whole *in flame*, by reason of its more easy separability, while the more fixed material charcoal remains behind. An inattention to this obvious and natural distinction, has embarrassed the phlogistic doctrine with much of the indistinctness and mystery with which it has been entangled.

From these two cases, we should distinguish that of *ignition*. For although redness may, and commonly does accompany inflammation and combustion, it does not follow that every ignition is either one or the other of those processes. The red heat produced (p. 3) by mixing copper filings and brimstone, does not appear to be an instance of combustion. The formation of the sulphuret of copper, in the manner related, is the result of the attractions between the sulphur and the metal respectively. A change in their capacities for heat is thereby effected; and the glow or incandescence mentioned, is the consequence. There is neither combustion nor inflammation. It is ignition only, and requires no more oxygene than the apparatus and the materials respectively contain, to produce the effect. We differ, therefore, from the learned author, who supposes it to be an anomalous fact, and to form an exception to the antiphlogistic doctrine.

As to flame, it appears to be the phlogiston of the fuel set loose, and burning in a gaseous state. It separates readily, and in common circumstances, assumes the form of inflammable air. When this is sufficiently heated, in contact with oxygen, there is an extrication of much caloric, from the condensation of the two gases into water or steam, and an evolution of light from the decomposition of phos-oxygenous air. It is owing, in a great degree, to the trifling specific gravity of the inflammable air that blaze so readily ascends. And if it mounts into the atmosphere, without burning at the time, it may afterwards become the material of some fiery or exploding meteor.

The flash which accompanies the decomposition of gunpowder, evidently proceeds from the phlogiston of the charcoal, and of the brimstone of that compound. For the charcoal employed is not pure, but always contains a portion of hydrogene. And hydrogene is a constant associate of sul-

phur. On the burning them together, their joint evolution of phlogiston may be easily conceived to furnish the flaming gas, which appears amidst the smoke of the explosion. But Dr. C. (p. 5, 6, and 7,) considers the sudden production of numerous elastic fluids, from a state of previous solidity, as incapable of reconcilement with the antiphlogistic theory. It may be confessed, the explanation of the phænomenon is not perfectly easy upon any theory: yet it militates as much against the doctrine of Black, as of Lavoisier. For, according to the former, the ingredients of gun-powder must have parted with their latent heat when they assumed the forms of salt-petre, sulphur, and carbone respectively. Deprived thus, of that material, and supplied with only the ordinary proportion, derived from the temperature in which it is kept, gun-powder would seem to be incapable of contributing instantaneously the quantity necessary to give elasticity to so many gases and vapours. But still, it may be believed, as the ingenious Pictet has affirmed, (Essay on Fire) that fire exists intimately, and chemically combined in bodies as a principle, or element. In this case, it possesses neither the thermometric nor calorific faculty, nor the tendency to equilibrium, which distinguishes its *free*, *specific*, and *latent* forms. If the fire is thus chemically connected and combined, so as to lose its peculiar properties, it may be accumulated, and stored up in solids, and on its separation assume the proper character of caloric. But, when it is considered that powder, exploded alone in a cannon, heats it more than when ball is added; and that the heat which a piece of ordnance possesses after the discharge, is very little owing to the heat produced by the inflammation of the powder, as Col. Thompson found by experiment; we must acknowledge it as hard to explain the heating of the gun, as the explosion of the powder. And in the present imperfect state of our knowledge concerning the extrication, distribution, and disappearance of heat, it will be most prudent to wait for additional facts and elucidations.

After stating his objections to the antiphlogistic theory of combustion, the author proceeds to offer his sentiments in favour of the phlogistic doctrine of that process: and he properly argues, that metals by calcination, both lose something and gain something. They part with phlogiston, and acquire oxygen. We quote Dr. C.'s own words from p. 18 and 19, which we consider one of the best parts of his production:

"Presuming however, that hydrogen really forms a constituent principle of metallic bodies, let us now see, how we can still reconcile its loss with the weight acquired. This I apprehend can readily be done, and the two contending systems united, by merely adverting to the great difference of specific gravity of oxygen and hydrogen. By reference to this circumstance alone, we shall perceive, that hydrogen may be evolved, and oxygen absorbed, leaving the body itself, in question, greatly augmented in absolute weight.

"One hundred cubic inches of oxygen gas weigh about 35 grains, whilst 100 of hydrogen weigh only about 2 $\frac{3}{4}$ grains; that is, the specific gravity of the former is to the latter, nearly as 13 to 1. Now if we suppose a metal to take up by oxydation one hundred cubic inches of oxygen, whilst it expels 100 of hydrogen, its weight after the process, will be equal to the weight of the original metal + 35 grains of oxygen—2 3-4 of hydrogen, or its weight is actually increased 32 1-4 grains. By this simple statement, it follows, that a principle of inflammability may absolutely escape, without destroying the importance and validity of Lavoisier's position, that in every case of combustion, oxygen is absorbed by the burning body."

And here we cannot omit again to mention, the synopsis of chemical nomenclature, which was published in 1801, at New-York, wherein all the reguline forms of metals are distinctly and positively arranged as phlogistures, or compounds of their several bases with hydrogen. And therein also, water is denominated the oxyd of phlogiston; oil and grease carbures of phlogiston; brimstone the sulphure of phlogiston; phosphorus the phosphure of phlogiston; azote the septure of phlogiston, &c. The calciform states of metals are termed oxyds; because the metals respectively are freed from their phlogiston and associated with oxygen. The material of colours is termed the fixed oxyd of light; dephlogisticated air or phos-oxygen, the gaseous oxyd of light; aërated charcoal the oxyd of carbone, &c. In this table also, several forms of metals are mentioned, which are neither phlogistures on the one part, nor oxyds on the other. These are massicot, finery-cinder, and flowers of zinc, which are conditions of lead, iron and zinc, as nearly pure as they can perhaps be obtained, being detached both from the inflammable principle and oxydizing agent, and existing per se as nearly as can happen to substances having such strong affinities to them both. And it further appears,

by a syllabus of lectures published at New-York, in 1809, that the same doctrines were publicly taught that year in the University there, with enlargement.

Having concluded his observations on combustion, Professor C. proceeds to consider the formation of acids. And here he contends, that although in the former process there is an escape of hydrogen, yet no acidification can take place without retaining a portion of it. (p. 24.)

If we should give an opinion on this subject, it would be somewhat different, and rather more circumstantial. In explaining the inflammation of sulphur, for example, we should say that at the proper temperature, the phos-oxygen, by its decomposition, gave out light and heat, while one portion of the oxygen, combined with sulphur, to form dry sulphuric acid, and another portion united with the phlogiston, (hydrogen) to form first blaze, and then water. The dry acid, in the moment of union, associating with the water, constitutes *liquid* sulphuric acid. So in the combustion of phosphorus, the phlogiston rises and in its gaseous form seizes a portion of atmospheric oxygen. The junction produces flame, with an extrication of light and heat. Water (the oxyd of phlogiston) is the product. At the same time another parcel of oxygen is arrested by the phosphorus; and the production of *dry* phosphoric acid is prevented by the moisture which instantly liquifies it. Other cases would, on explanation, afford evidence equally strong, that the phlogiston of the inflammable body entered first into the constitution of water, and that the water afterwards by solution, gave activity to the acid that was engendered with it.

But on the subject of acidification, the prudent inquirer must now pause. A second oxygen is announced to the world, and the probable existence of more sour-getting agents. (See our present vol. p. 304-5.) This astonishes the lovers of chemistry as much as the intelligence received some time before from the same respectable source; that oxygen, besides being the generator of acids, was also the parent of alkalies.

It was the opinion of Priestley, a faithful relator of what he knew, (Methodized Expt. and Observations on Air, vol. 3. p. 535) "that *water*, or rather *vapour*, is the basis of all "kinds of air, or that to which they owe their peculiar kind "of elasticity; so that all kinds of air may be said to be va- "pour with something else so attached to it, as to prevent "its condensation in the temperature of the atmosphere."—

He told the writer of this article once in a conversation, that he believed there was no method of detaching from air the whole water it contained; and all that was ponderable in a gas, was probably, the water with which it was connected. And these sentiments, from so great and grave an authority, are worthy of the most serious consideration.

"The sole difference," as the author apprehends, "between "acidification and combustion, is this: all combustibles, as "the term implies, are capable of combustion, but all are not "equally capable of acidification. Now, in both cases, oxy-"gen is retained in the product formed; but the difference "in these products arises from the detention of a portion of "hydrogen in cases of acidification, which is removed in "the other." (p. 39.) The correctness of this criterion, may well be doubted, except as far as the hydrogen is an integrant part of water, and water the medium of liquidity. In no other manner, does it seem likely to us, that hydrogen enters into the composition of carbonic acid gas, arsenical acid, and the other products of acidity. And whenever it does enter as an ingredient into the constitution of acids, with double or triple bases; it is not as the material essential to sourness, but as a modifier of the acid, in regard to its peculiar character.

In a former page of this review, we mentioned the threefold condition of metals, to wit, their *metallic* state, when combined with phlogiston; their *calciform* state, when united with oxygen; and their *simple* state when associated with neither one nor the other. To these, we add a *fourth* condition of metals; that is, when they are connected with phlogiston and oxygen at the same time. Quicksilver in particular, seems to adhere to both together; or in other words, it sometimes attracts oxygen without discharging phlogiston. By this process is formed the *mercurius præcipitatus per se;* which, by a mere augmentation of the temperature, lets go a quantity of oxygenous gas, and re-assumes the form of a metal. And this interpretation, which is warranted by the facts, reconciles this curious experiment to our comprehension, and to system.

We ask excuse from our readers, for dilating more at large upon this copious and engaging theme. It would be easy to swell our observations into a volume. But before we proceed further, we shall extract the authors remarks, near the close of his work:

"I have thus endeavoured to unite in one point, the wo

great, and long contending systems, which, until lately agitated the chemical world. By this union, I have endeavoured to maintain the high importance of oxygen, in combustion and acidification; and have also ventured to characterize it as the principle of alkalescence.—At the same time I have maintained the equal importance of an inflammable principle, (whether denominated hydrogen or phlogiston) in the two first named processes. In union, or alone, these two important agents, seem to divide the extensive and interesting field of chemical science. United, they form the immense mass of waters, which serve as reservoirs, to preserve them in a latent state, till called for by the agencies of affinity:—and perhaps this immense diffusion itself of these two bodies, might serve as an argument, in favour of the opinions I have advocated. In a state of separation, hydrogen, united to certain bases, gives the character of metallic bodies; whilst the same bases in union with oxygen alone, are marked by the distinctive characters of oxyds, modified in both cases, by the peculiar nature of the base itself; hence, arise, in some instances, those peculiar oxyds to which is attached the name of alkalies.—By the union of these two principles together, in certain bases, the variety of acids spring into existence. If we find objections to the opinion, of the necessity of hydrogen in the process of acidification, from perceiving this principle, *apparently*, absent in some cases; the same objections are found to exist with respect to oxygen; so that both are strictly on the same footing. When we review the other processes of nature, and perceive the continual necessity for these two principles, either separate or conjointly, I cannot but believe in the opinions I have advanced, and maintain still, the doctrine of phlogiston thus modified.

"In the immature exposition of a theory formed upon the facts which have been detailed, I perceive much that is open to criticism. Yet these facts press so strongly upon my mind, that whether right or wrong in the conclusions I have drawn from them, I cannot persuade myself the antiphlogistic doctrines are perfect, or that those of phlogiston are incapable of support. I have endeavoured to show that, by their union, several points may be, apparently better explained, than by either theory alone; and as my sole desire is, to see the doctrines of chemistry as perfect as possible: as I have candidly avowed the reasons of my dissent from those at present taught; and have not endeavoured to con-

ceal what may appear adverse to those herein brought forward; so, I trust that candour and liberality will mark the review which they are calculated to elicit: nor shall I for an instant doubt, if the edifice can be strengthened by the observations of others; that such observations will be given with equal cheerfulness, as any which oppose it will be received by the author."

As to the existence of phlogiston as the material of flame, it is such a self-evident fact, that it is truly surprising that any persons possessed of their senses, could have doubted it. And the employment of a magnificent galvanic apparatus, by a most skilful hand, to show that it exists in sulphur and phosphorus, is like proving from elaborate and optical considerations that men can see: or establishing by grave and profound examinations of their component elements that stones are hard.

Let us try, however, before we conclude, how far chemical changes are capable of interpretation by the introduction of phlogiston, as the auxiliary of oxygen.

A few examples, derived from our old stock of arguments, will illustrate our meaning and object: 1. If filings of iron, and vitreous oxyd of lead are exposed together to a proper heat, they change their conditions: the lead being revived and the iron calcined. The true theory of these alterations is, that while the oxygen of the lead goes to destroy the lustre and malleability of the iron; the phlogiston of the iron imparts metallic qualities to the lead. 2. When zinc is suspended in a watery solution of the acetate of lead, the zinc soon combines with the menstruum, and the lead returns to its metallic character. The plain reason is, that when the lead quits its connexion with the acid, it instantly, and *in transitu* associates with the phlogiston, from which the zinc had disengaged itself, previous to entering into union with the menstruum. 3. Sulphuric acid, by addition of charcoal, is converted to sulphur. Charcoal consists chiefly of carbone and phlogiston. Therefore, while the carbone unites with oxygen to form carbonic acid and its gas; the phlogiston joins the base of the acid to constitute brimstone. 4. Charcoal is universally employed to reduce ores and oxyds to their metallic state. Why? because the carbone carried off the oxygen, while the phlogiston allies itself to the metal; and by the abstraction of one material, and the addition of another, the desired changes are wrought which these agents are capable of affecting.—*The new facts are*

equally striking: for 5. Common potash, (now found to be the oxyd of a newly discovered metal, potassium) when exposed with iron, to a white heat, undergoes a change itself, and produces an alteration in the other metal. In that high temperature, the potassium borrows phlogiston from the iron, and becomes a metal; while the iron attracts oxygen from the potassium, and turns to an oxyd. So when potassium is taken from the midst of the naphtha in which it is preserved, and thrown into water, there seems to be another double decomposition wrought. For while the potassium combines with the oxygen of the water, and thereby is made to assume the form of an oxyd of potassium, (or caustic potash) its own phlogiston is displaced, and in union with the phlogiston of the decomposed water, rises to form flame or blaze, by acting upon the phos-oxygen of the atmosphere. And thus both the phlogistication, and oxygenation of potassium, are in perfect harmony with the other phænomena on this head.

It would be perfectly in our power to state from our memorandums of long record, other examples equally in point, to evince the aptness of this theory to explain processes both in the *moist* and *dry* way. By the introduction of a *double* elective attraction, instead of a *single* one, it more powerfully and promptly achieves the business. And when the incompleteness of the present and popular hypothesis is contrasted, with the fulness and sufficiency of that now proposed, we entertain no doubt, that a theory true to fact and nature, and competent to explain all the phænomena, will find a general reception.

Report of the Commissioners appointed by joint resolutions of the Senate and Assembly of the State of New-York, on the 13th and 15th March, 1810, *to explore the route of an* INLAND NAVIGATION *from Hudson's River to Lake Ontario and Lake Erie.* New-York. Prior & Duning. 1811. 8vo. pp. 38.

Letters addressed to the PEOPLE OF PENNSYLVANIA, *respecting the internal improvement of the commonwealth by means of roads and canals.* By WILLIAM J. DUANE. Philadelphia. Aitken. 1811. 8vo. pp. 125.

THE similarity of the subjects treated of in these two publications, leads us to notice them in connexion. They both inculcate the usefulness and importance of such internal improvements as will render the transportation of produce both easy and cheap, throughout the contiguous states of New-York and Pennsylvania. The improvements meditated, or something of the kind, are highly agreeable. And the authors both of the Report to the Legislature, and the Letters to the People, indicate a proper mixture of zeal and intelligence.

For various views of the country and its relations, lying between Albany and Buffaloe, we refer to our present volume, p. 250. It is there particularly mentioned what were the probable limits of Canada, as understood by the French government, colonizing the regions irrigated by the waters which fall into the river St. Lawrence, and which form much of the country now embraced by the northern and western counties of New-York. And we also call the attention of our readers to the State-Papers published in 1724, on the competition by the French up the St. Lawrence, and the English up the Mohawk, for the commerce with the natives : particularly to the Report of Barberie, Van Horn, and other Members of the Council, on this mercantile intercourse ; and to the Memorial of the Surveyor-General to Governor Burnet on the Fur-trade of New-York. These subjects were then ably discussed.

Difficulties often arise from the disagreement which exists between the natural boundaries prescribed in physical geography, and the artificial lines established in civil geography. It is a convenience, indeed it may be called a happiness, so to locate a region or territory as that the limits of the civil jurisdiction should correspond with natural barriers. When

this coincidence is disregarded, embarrassment, and even distraction may arise. There will be some advantage to the discussion, in stating the facts.

About the year 1603, the French began their sēttlements on the St. Lawrence. According to the obvious course of conduct, they looked up that river, and traced the branches of its streams to their sources. And these waters, with the adjacent and intervening lands, they considered as their own.

In the year 1609, the Dutch began to improve the banks of the Hudson. In process of time, this Batavian colony became a British Province. Under both administrations, the Hudson and its tributary floods, with their adjoining soil, were deemed to be within the jurisdiction of New-Netherland, or New-York. How far this claim originally extended, does not very plainly appear. The historian of the Iroquois, who occupied the regions north and south of the Mohawk River, and southward and eastward of lake Ontario, calls them the *Five Indian Nations of Canada, dependant on the government of New-York.* This distinguished writer held the office of President of the Council, and performed the duties of Lieutenant-Governor. He published his book in 1747, and may therefore be considered as an indisputable authority.

From this view of the subject, it would appear, that the claims of New-York were originally very limited and moderate. Its government, however, learned in process of time the art of extending its territory. And before the termination of the revolutionary contest, the greater part of what is now called Upper Canada, was considered as lying within the restricted limits of New-York. For by the deed of cession made by New-York to the United States, in the month of March, 1781, the state was contracted on the north to the 45th degree of latitude, and on the west, to a meridian line, drawn through the most westerly bend of lake Ontario, until it intersected a continuation of the line forming the northern boundary of Pennsylvania. By this construction, the lands beyond the Rice Lakes, the Shallow Lakes, lake Simcoe, and even the eastern extremity of lake Huron, lay within the state of New-York; as did also that valuable and populous tract, situated west of Niagara River, and between Ontario and Erie. All the right, title, and jurisdiction of New-York to lands and territories northward and westward of the two before-mentioned lines, were ceded

for the benefit of such states as were then, or should afterwards become members of the confederation.

The undefined claim of New-York to territory and jurisdiction, was thus circumscribed, by voluntary release and surrender. The boundaries thus adjusted at home, shortly after suffered great reduction by the treaty of Paris. For by this, the forty-fifth degree of latitude was recognized as the boundary no further than the river St. Lawrence; and the dividing line, thereafter drawn through the middle of that river, of lake Ontario, of Niagara River, of lake Erie, of lake Huron, &c.; thereby adjudging to the British Government, the extensive territory claimed by New-York, north, and north-west of lake Ontario, the river St. Lawrence, &c. Also, the claim of New-York was further curtailed, by the positive refusal of the inhabitants of its two counties, Cumberland and Gloucester, to submit to its laws. And the unyielding temper of these people terminated at length in the erection of the country they occupied on both sides of the Green Mountains, between lake Champlain and Connecticut River, into the independent state of Vermont.

But these were mere acts of civil convention. They only altered the jurisdiction, title and government. They did not change the settled and physical constitution of things. The Sorel continued to discharge the waters of lakes George and Champlain, as before; and the Saint Lawrence was, as in times past, the channel by which the greater and higher reservoirs poured their contents, to encircle Montreal and to wash Quebec. It was, therefore, perfectly rational, that the inhabitants of the adjoining regions should seek a market for their produce along the canal which nature had made, instead of conveying it by difficult roads, to a place which treaties and compacts alone had created an emporium. And if it should ever happen, in the event of negociation or war, that Lower Canada, and with it the entire navigation of the Saint Lawrence, should accrue to the United States, much will have been thereby done towards the accommodation of the existing complaints.

The transportation of western articles to a market, had ever been a subject of contention between the British and French governments, while the latter possessed Canada. The fur-trade was a matter of perpetual jealousy and strife; the French endeavouring to carry it down the St. Lawrence to Montreal, and the British labouring to bring it along the Mohawk to Albany. And in this struggle, which was both commercial

and territorial, the greatest efforts were made by the rival nations and their respective colonies, to secure the friendship of the Iroquois and the other Indian tribes. This communication continues to be a favourite object with New-York. By bringing the exports of the west to the towns on the Hudson, the owners could have a choice of markets, and the men of business at Utica, Schenectady, Albany, New-York and other places, would probably deal with them upon the best terms. Under these impressions, the Western and Northern Inland Lock-Navigation Companies were formed. The latter of these has long ceased to do any thing. And the former, after laborious and expensive efforts, finds itself incompetent to the arduous task. Further legislative aid was asked; and a board of seven commissioners was appointed to survey and explore the country to the west of Albany more particularly than had been done on any former occasion.

The pamphlet now before us is their official report to the power that appointed them.

They state, that the beds of rivers ought not to be used for inland navigation where canals are practicable. They are of opinion, that vessels of a size and form fit to navigate lake Ontario cannot be taken across from Hudson River, from the want of water at the summit level, near Rome. It is even questionable whether a sufficient supply could be obtained for boats, if much business should be attempted. But if this could be surmounted, the impediments to a canal navigation between Oswego Falls and lake Ontario, are so formidable, as to lead to the recommendation of a rail-way. The cost of completing the intercourse by this route is a matter of prudential foresight and calculation. Considering the circuitous and expensive course of launching into Ontario, it is believed that it would be preferable to open the connexion between Erie and the Hudson at once. They say, that things once afloat on Ontario will, generally speaking, go to Montreal, unless our British neighbours are blind to their own interest. The circumstances are so propitious, that a good sloop navigation can be effected from above Gallot's rapids to Montreal, cheaper than a proper boat navigation from Oswego to Rome.

The commissioners, therefore, turn their attention to the direct navigation from Hudson's river to lake Erie, without entering Ontario at all. They compute that such a canal will turn to the United States the commerce of the upper

lakes, and of many intervening situations: and will render the delivery of merchandize cheaper from the Tonewanto to New-York, than from Queenstown to Montreal.

They think no supposable expense can bear an undue proportion to the value of the work, even should it amount to fifty millions of dollars. It is conceived, however, that this great national object may be achieved for five millions. They protest against a grant of the privilege to private persons or companies, lest it should become the subject of a job, or a fund for speculation. They think it should, therefore, be a public undertaking, and be patronized by those who are to participate the advantages, to wit, the state of New-York, and the United States, by regular appropriations of money, &c.

So much for a sketch of this instructive memoir. They who are interested in a more particular knowledge of its contents, will give it a deliberate perusal. We have heard that measures have been adopted to continue the inquiries so spiritedly begun. We hope they will experience no delay: for, until the canal is not only begun, but completed, that part of the produce of Erie, as well as of Ontario, which does not consist of live stock that can transport itself; and which is not brought to the Hudson by the existing water-route, from the Cayuga Lake to the Mohawk; or along the turnpike roads, in waggons; or on a snowy surface, during the winter, in sleighs; will float gently, or with no other than the natural interruptions and diversions, down its accustomed channel to Montreal. In magnitude, we consider this project as surpassing, by a great difference, Louis the 14th's canal of Languedoc, connecting the Mediterranean with the Garonne: and Bonaparte's more modern enterprize, of forming a junction between the Baltic and the Scheldt. In utility, it will be unparalleled, by making a firm and lasting connexion between the eastern and western states.

We have already dwelt so much more at large on this pamphlet than we intended, that we find ourselves obliged to be brief upon the other which we associated with it. We must therefore content ourselves with stating that Mr. D. has been a member of the Pennsylvanian Assembly, and that he was Chairman of the Committee on Roads and Inland Navigation, during the session of 1809—10. In that situation, he found it to be his duty to seek information: and he was enabled to satisfy himself as to some of the causes why Pennsylvania was so backward in undertaking works for

internal improvement. These are detailed in the series of letters to the people at large, and may be considered as an appeal to their sense and judgment, from the inactivity of the Legislature. He is a zealous and spirited friend to facilitated intercourse. He discusses the subjects before him with intelligence. And although he seems to forget that the channel of the Susquehannah ought to be free, to carry produce from Pennsylvania to Maryland, as well as to bring it from New-York to Pennsylvania, yet we are clearly of opinion the lovers of domestic improvements, especially in the commonwealth where the writer resides, will read his pages with satisfaction, and concur with him in many of his views and statements.

A Statement of Facts relative to the Establishment and progress of the ELGIN BOTANIC GARDEN, *and the subsequent disposal of the same to the State of New-York. By* DAVID HOSACK, *M. D. Professor of Botany and Materia Medica in Columbia College.* New-York: Van Winkle. 1811. 8vo. pp. 56.

HORTUS ELGINENSIS: *or a Catalogue of Plants, indigenous and exotic, cultivated in the Elgin Botanic Garden, in the vicinity of the city of New-York, established in* 1801. *By* DAVID HOSACK, *M. D. F. L. S. Professor of Botany and Materia Medica in Columbia College: Member of the American Philosophical Society, &c.* New-York: Swords. 1811. 8vo. pp. 65. *(With a perspective view.)*

ALTHOUGH these are distinct publications, yet we review them together, on account of the sameness of the subject to which they relate, and the nearness of the time when they were published. They both contain information about the botanic garden in the neighbourhood of New-York city, which, after having been established by the zealous and extraordinary exertions of an individual, was lately purchased for the public.

We perceive in the former of these tracts, a very circumstantial and detailed history of this institution. (See pages 6, 7, 9, 10, 11, &c.)

He then recites fruitless applications to the Legislature in 1805 & 6, and various subsequent events.

Afterwards follow the proceedings at Albany, during 1809 and 1810, which terminated in the enactment of a statute for purchasing Elgin garden. It was passed on the 12th March, 1810, and is as follows; to wit:

AN ACT,

For the promotion of Medical Science.

WHEREAS the medical society of the city and county of New-York, the common council of the said city, the governors of the New-York hospital, the medical society of the state of New-York, and divers respectable citizens, are deeply impressed with an opinion that the botanic garden established and owned by David Hosack, of the said city, physician, at a place called Elgin, near the said city, may become a great public benefit by being applied to promote medical science in this state; and under the influence of this opinion they have strongly recommended it to the Legislature to purchase the said botanic garden, in behalf of the state. *And whereas* the Legislature, as well from a respect to the said recommendation, as from a persuasion that the said botanic garden, in the hands of the state, will essentially conduce to the advancement of medical knowledge, are desirous that the said purchase may be made; wherefore,

I. *Be it enacted by the People of the State of New-York, represented in Senate and Assembly*, That the commissioners of the land-office be, and they are hereby directed, with all convenient speed, to treat in behalf of the people of this state with the said David Hosack, for the purchase of lands comprising the botanic garden, commonly called Elgin, with the appurtenances, near the said city of New-York, and owned by the said David Hosack, at a fair and equitable valuation thereof, to be made by such persons and in such manner as the said commissioners shall for that purpose direct and appoint; and if, upon such treaty and valuation, the said David Hosack shall consent to sell the said lands, with the appurtenances, to the said commissioners, for the use of the people of this state, for the price at which the same shall have been valued, then and in such case, the said commissioners shall give notice thereof to the attorney-general of the state, or to the attorney of the district in which the city and county of New-York is situate, and thereupon it shall be the duty of the attorney-general, or of the district-

attorney, to examine the title of the said David Hosack to the said lands, when the state of the title shall be exhibited to him by the said David Hosack, and if upon such examination it shall be found that the said title is perfect and free from all incumbrances, it shall be the further duty of the attorney-general, or of the district-attorney, to receive from the said David Hosack, a good and sufficient deed of the land, with the appurtenances, to the people of this state. *Provided always*, That the said commissioners shall not be authorised to include in such valuation the trees, plants and shrubs, appertaining to the said botanic garden, but they shall nevertheless require that the said trees, plants and shrubs shall be conveyed by the said deed: *Provided always*, That the valuation so made by the appraisers shall not be conclusive or binding on the commissioners of the land office.

II. *And be it further enacted*, That after the said deed has been duly executed and acknowledged, and delivered to the attorney-general, or the district-attorney, it shall be the further duty of the attorney-general, or of the district-attorney, to endorse and subscribe on the said deed a certificate, setting forth that he approves of the deed; that he has examined the title of the said David Hosack to the lands by the said deed conveyed, and that upon such examination, he found the said title to be perfect and free from all incumbrances; and thereupon it shall be the further duty of the attorney-general, or of the district-attorney, to transmit the said deed without delay to the office of the secretary of this state, to be there recorded.

III. *And be it further enacted*, That immediately after the said deed shall be received for record in the office of the secretary of this state, it shall be the secretary's duty to notify the same to the managers hereinafter named, together with the amount of the consideration money in the said deed expressed; whereupon the said managers, or a majority of them, and the survivors and survivor of them, shall have power to raise the said consideration money by a lottery, consisting of one or more classes, and to adopt such scheme or schemes as to them, or a majority of them, or the survivors or survivor of them, may appear proper, to sell the tickets, and to superintend the drawing of the lottery, and the payment of the prizes of the same: *Provided always*, That the said managers shall not proceed to sell any of the tickets of the said lottery until after the drawing of every other lottery heretofore authorized by law.

IV. *And be it further enacted*, That each of the said managers, before he takes upon himself the management of the said lottery or lotteries, shall enter into a bond to the people of this state, with such sureties as the comptroller of this state shall approve of, in the sum of twenty-five thousand dollars, conditioned for the honest and faithful discharge of the duties required of him by this act, and for rendering a just account of his proceedings at the next session of the legislature after the drawing of said lottery.

V. *And be it further enacted*, That the said managers, as often as they shall receive five thousand dollars from the sales of tickets, shall deposit the same for safe keeping in one of the banks established within this state.

VI. *And be it further enacted*, That the said managers, after drawing of each class of the said lottery, shall forthwith pay the net amount or avails of the class so drawn to the said David Hosack, towards satisfaction of the consideration money expressed in the deed above mentioned.

VII. *And be it further enacted*, That Samuel L. Mitchill, John L. Broome, Benjamin De Witt, Moss Kent and Jeremiah Johnson, shall be, and hereby are appointed managers of the said lottery.

VIII. *And be it further enacted*, That it shall also be the duty of the secretary of this state, immediately after the receipt of the said deed for record as aforesaid, to give notice thereof to his excellency the governor, and that thereupon it shall and may be lawful for the regents of the university, and they are hereby required, from time to time, to make such orders and regulations relative to the keeping, maintaining and preserving the said botanic garden, and the use and employment thereof for the benefit of the medical schools of this state, as they shall judge to be most conducive to the public good; and they are hereby directed to make such regulations and take such measures for the support of the said establishment, that it shall be attended with no future charge or expense to the state: *Provided always*, That the physicians and students of medicine throughout the state shall at all times have access to the said botanic garden free from any expense: *And provided further*, and it is the true intent and meaning of this act, that the people of this state shall have the right at all times to sell and dispose of said property in such way and for such purposes as they may deem expedient.

Pursuant to the provisions of this act, a deed was executed by the proprietor, to the people of the state of New-York, for the lands comprehended in Elgin garden, with the appurtenances, for the consideration of seventy-four thousand two hundred and sixty-eight dollars and seventy-five cents: which money the managers will undertake to procure, as soon as the lotteries having a priority shall be disposed of.

The time of commencing the business of this lottery cannot with absolute certainty be stated. Other sums of money must in the first place be raised by older lotteries. These are the following. A consideration of them will enable the most correct judgment to be formed.

The act, entitled "An act for the endowment of Union College," passed 30th March, 1805, is now the only act which authorizes the drawing of any lotteries within this state:

That by this act there is directed to be raised, exclusive of the expenses of drawing, the sum of 80,000 dollars, by four successive lotteries, which is appropriated for the endowment of Union College, as follows, viz.—For the erection of additional edifices for the accommodation of students in the college, a sum not exceeding 35,000 dollars; for creating a fund, the annual income of which is to be applied to the support of professorships in the college, 35,000 dollars; for creating a fund, the annual income of which is to be applied to the establishing and maintaining a classical library in the college, 5,000 dollars; and for creating a fund, the annual income of which is to be applied towards defraying the expenses of indigent scholars pursuing their education in that college, 5,000 dollars.

By the act, entitled "An act supplementary to the act, entitled "An act making provision for improving Hudson's River below the city of Albany, and for other purposes," passed 7th April, 1807, the managers of the above mentioned lotteries are directed to raise an additional sum of 5,000 dollars by each lottery, and to pay the same into the treasury to re-imburse the state for an appropriation of 20,000 dollars, made by the same act for completing the public building now denominated the capitol—and that by the act, entitled "An act making further provision for the erection of an arsenal in the city of New-York, and for other purposes," passed 8th November, 1808, the said managers are directed to raise by each of the said lotteries the further sum of

5,000 dollars, and to pay the same to the regents of the university for the endowment of the college of physicians and surgeons of this state.

The whole amount thus to be raised by the said four lotteries, exclusive of expenses, is one hundred and twenty thousand dollars.

In addition to which it may be stated, that

In the act for the payment of certain officers of government, and for other purposes, passed 7th April, 1806, it is made lawful for the board of Health of the City of New-York, to raise the sum of twenty-five thousand dollars by lottery, to be applied to the erection of such buildings as they shall deem necessary for the accommodation of persons sick with malignant disease: Provided, that no tickets shall be sold in the said lottery until the tickets in the lotteries now authorized by law are disposed of.

But as there are no managers appointed, nor any authorization to draw, there can be no proceeding on this last-mentioned lottery without further aid from the Legislature.

In the latter of these pamphlets, we find a comprehensive catalogue of the plants contained in the aforesaid garden. The list is alphabetically arranged; and to the scientific names of the genera and species, are added the popular, or common English denominations by which they are known.

The printing is executed with elegance, and a beautiful view of the improvements is prefixed, drawn by Reinagle, and engraved by Leney. In addition to the Linnæan terms, are the synonymous and new terms, given by Bartram, Michaux, Lamark, L'Heretier, Jussieu, Jacquin, Muhlenberg, Murray, Roxburgh, Persoon, Schwartz, Walter, Wildenow, Curtis, and other modern improvers of botany. These give it a high and substantial value, especially for the modern student; for it thereby becomes an index to the writings of those authors, as well as a catalogue to the garden itself.

This performance also designates the native countries of the vegetables mentioned; and informs whether they were brought originally from the Phillipine Islands, West Indies, New Holland, the Cape of Good Hope, or any other region. And it indicates by a concise, though significant character, the duration of each species as an annual, biennial, or perennial production; its condition, whether shrub or tree; its constitution as adapted to the open atmosphere, the green-house or hot-house; and its employment either in agriculture or medicine.

Having on several occasions before, in the course of our publication, made respectful mention of this establishment, we refer our readers to Hex. II. vol. 3, p. 438-9, to vol. 4. p. 209, and to Hex. III. vol. 1, p. 292, for the notices we gave of the undertaking itself; of the first edition of the Catalogue, and of the more improved state of the institution in 1810. At present, therefore, we shall employ the opportunity we possess, of doing justice to the subjects before us, by referring to the preface, p. 7. to 10, for a full explanation of the connexions the author has formed, and of the assistance they have afforded him in his arduous and expensive undertaking.

AMERICAN ORNITHOLOGY: *or the Natural History of the Birds of the* UNITED STATES. *Illustrated with plates, engraved and coloured, from original drawings taken from nature. By* ALEXANDER WILSON. Vol. III. *Philadelphia. Bradford and Inskeep:* large 4to. 1811. p. 120.

OF this splendid work, we gave such ample views and recommendations in our Hexade II. vol. 6, p. 81, and 155, and in Hexade III. vol. 2, p. 47 and 59, that we need not repeat the eulogies we then pronounced. It however becomes us now to announce, that Mr. Wilson continues his labours with increasing spirit and success, and that this volume, if possible, exceeds the two former in elegance of execution. When it is considered that he delineates and describes known species of birds, in a more pleasing and instructive manner than had been generally done before, we cannot but wish him health and ability, to persevere in his laborious work. But when we reflect how many errors of his predecessors are corrected; and more especially what a number of new species are brought by him to our notice, the discontinuance of his exertions from any cause, would be deemed by all the lovers of science, a calamitous event.

The birds figured and described in this volume are the mottled owl, meadow lark, black, and white creeper, pine-creeping warbler, Louisiana tanager, L. crow, L. wood-pecker, Canada jay, snow bunting, rusty grakle, purple grakle, swamp sparrow, white throated sparrow, Savannah sparrow, fox-coloured sparrow, logger head shrike, belted kingfisher, black and yellow warbler, blackburnian warbler, autumnal

warbler, water thrush, painted bunting, (male and female) prothonotary warbler, worm-eating warbler, yellow-winged sparrow, blue grosbeak, Mississippi kite, Tennesseewarbler, Kentucky warbler, prairie warbler, Carolina parrot, Canada fly-catcher, hooded fly-catcher, green black capped fly-catcher, pinnated grous, (*tetrao cupido*, a grand figure, with cupid's wings) blue green warbler and Nashville warbler; in all thirty-eight likenesses, drawn from nature, by the author's own hand, and engraved by Lawson.

We quote from p. 80, and seq. his description of the Mississippi kite.

"This new species I first observed in the Mississippi territory, a few miles below Natchez, on the plantation of William Dunbar, esquire, where the bird represented in the plate was obtained, after being slightly wounded; and the drawing made with great care from the living bird. To the hospitality of the gentleman above mentioned and his amiable family, I am indebted for the opportunity afforded me of procuring this and one or two more new species. This excellent man (whose life has been devoted to science) though at that time confined to bed by a severe and dangerous indisposition, and personally unacquainted with me, no sooner heard of my arrival at the town of Natchez, than he sent a servant and horses, with an invitation and request, to come and make his house my home and head quarters, while engaged in exploring that part of the country. The few happy days I spent there I shall never forget.

"In my perambulations, I frequently remarked this hawk sailing about in easy circles, and at a considerable height in the air, generally in company with the turkey buzzards, whose manner of flight it so exactly imitates as to seem the same species, only in miniature, or seen at a more immense height. Why these two birds, whose food and manners, in other respects, are so different, should so frequently associate together in air, I am at a loss to comprehend. We cannot for a moment suppose them mutually deceived by the similarity of each other's flight: the keenness of their vision forbids all suspicion of this kind. They may perhaps be engaged, at such times, in mere amusement, as they are observed to soar to great heights previous to a storm; or, what is more probable, may both be in pursuit of their respective food. One that he may reconnoitre a vast extent of surface below, and trace the tainted atmosphere to his favourite carrion; the other in search of those large beetles, or

coleopterous insects, that are known often to wing the higher regions of the air; and which, in the three individuals of this species of hawk which I examined by dissection, were the only substances found in their stomachs. For several miles, as I passed near Bayou Manchak, the trees were swarming with a kind of *cicada*, or locust, that made a deafening noise; and here I observed numbers of the hawk now before us sweeping about among the trees like swallows, evidently in pursuit of these locusts; so that insects, it would appear, are the principal food of this species. Yet when we contemplate the beak and talons of this bird, both so sharp and powerful, it is difficult to believe that they were not intended by nature for some more formidable prey than beetles, locusts, or grasshoppers; and I doubt not but mice, lizards, snakes and small birds, furnish him with an occasional repast.

"This Hawk, though wounded and precipitated from a vast height, exhibited, in his distress, symptoms of great strength, and an almost unconquerable spirit. I no sooner approached to pick him up than he instantly gave battle, striking rapidly with his claws, wheeling round and round as he lay partly on his rump; and defending himself with great vigilance and dexterity; while his dark red eye sparkled with rage. Notwithstanding all my caution in seizing him to carry him home, he struck his hind claw into my hand with such force as to penetrate into the bone. Anxious to preserve his life, I endeavoured gently to disengage it; but this made him only contract it the more powerfully, causing such pain that I had no other alternative but that of cutting the sinew of his heel with my penknife. The whole time he lived with me, he seemed to watch every movement I made; erecting the feathers of his hind head, and eyeing me with savage fierceness; considering me, no doubt, as the greatest savage of the two. What effect education might have had on this species under the tutorship of some of the old European professors of falconry, I know not; but if extent of wing, and energy of character, and ease and rapidity of flight, would have been any recommendations to royal patronage, this species possesses all these in a very eminent degree.

"The long pointed wings and forked tail point out the affinity of this bird to that family, or subdivision of the falco genus, distinguished by the name of kites, which sail without flapping the wings, and eat from their talons as they glide along.

" The Mississippi kite measures fourteen inches in length, and thirty-six inches, or three feet, in extent! The head, neck, and exterior webs of the secondaries, are of a hoary white; the lower parts a whitish ash; bill, cere, lores, and narrow line round the eye, black; back, rump, scapulars, and wing coverts dark blackish ash; wings very long and pointed. the third quill the longest; the primaries are black, marked down each side of the shaft with reddish sorrel; primary coverts also slightly touched with the same; all the upper plumage at the roots is white; the scapulars are also spotted with white; but this cannot be perceived unless the feathers be blown aside; tail slightly forked, and, as well as the rump, jet black; legs vermilion, tinged with orange, and becoming blackish towards the toes; claws black; iris of the eye dark red, pupil black.

" This was a male. With the female, which is expected soon from that country, I shall, in a future volume, communicate such further information relative to their manners and incubation, as I may be able to collect."

We offer our readers also an extract from his history of the Carolina parrot. (p. 89)

" Of one hundred and sixty-eight kinds of parrots enumerated by European writers as inhabiting the various regions of the globe, this is the only species found native within the territory of the United States. The vast and luxuriant tracts lying within the torrid zone seem to be the favourite residence of those noisy, numerous and richly plumaged tribes. The count de Buffon has indeed circumscribed the whole genus of parrots to a space not extending more than twenty-three degrees on each side of the equator; but later discoveries have shewn this statement to be incorrect; as these birds have been found on our continent as far south as the straits of Magellan, and even on the remote shores of Van Diemen's Land in Terra Australasia. The species now under consideration is also known to inhabit the interior of Louisiana, and the shores of the Mississippi and Ohio and their tributary waters, even beyond the Illinois river, to the neighbourhood of lake Michigan in lat. 42° North; and, contrary to the generally received opinion, is chiefly *resident* in all these places. Eastward, however, of the great range of the Alleghany, it is seldom seen farther north than the state of Maryland; though straggling parties have been occasionally observed among the vallies of the Juniata; and according to some, even twenty-five miles to the

north-west of Albany, in the state of New-York.* But such accidental visits furnish no certain criteria by which to judge of their usual extent of range; those aërial voyagers, as well as others who navigate the deep, being subject to be cast away, by the violence of the elements, on distant shores and unknown countries.

"From these circumstances of the northern residence of this species, we might be justified in concluding it to be a very hardy bird, more capable of sustaining cold than nine-tenths of its tribe; and so I believe it is; having myself seen them, in the month of February, along the banks of the Ohio, in a snow storm, flying about like pigeons, and in full cry.

"The preference, however, which this bird gives to the western countries lying in the same parallel of latitude with those eastward of the Alleghany mountains, which it rarely or never visits, is worthy of remark; and has been adduced, by different writers, as a proof of the superior mildness of climate in the former to that of the latter. But there are other reasons for this partiality equally powerful, though hitherto overlooked; namely, certain peculiar features of country to which these birds are particularly and strongly attached; these are, low rich alluvial bottoms, along the borders of creeks, covered with a gigantic growth of sycamore-trees or button wood—deep and almost impenetrable swamps, where the vast and towering cypresses lift their still more majestic heads; and those singular salines, or as they are usually called *licks*, so generally interspersed over that country, and which are regularly and eagerly visited by the parakeets. A still greater inducement is the superior abundance of their favourite fruits. That food which the parakeet prefers to all others, is the seeds of the cockle burr, a plant rarely found in the lower parts of Pennsylvania, or New-York; but which unfortunately grows in too great abundance along the shores of the Ohio and Mississippi, so much so as to render the wool of those sheep that pasture where it most abounds, scarcely worth the cleaning, covering them with one solid mass of burrs, wrought up and imbedded into the fleece, to the great annoyance of this valuable animal. The seeds of the cypress-tree and hackberry, as well as beech nuts, are also great favourites with these birds; the two former of which are not commonly found in

* Barton's Fragments, &c. p. 6, Introd.

Pennsylvania, and the latter by no means so general or so productive. Here then are several powerful reasons, more dependant on soil than climate, for the preference given by these birds to the luxuriant regions of the west. Pennsylvania, indeed, and also Maryland, abound with excellent apple orchards, on the ripe fruit of which the parakeets occasionally feed. But I have my doubts whether their depredations in the orchard be not as much the result of wanton play and mischief, as regard for the seeds of the fruit, which they are supposed to be in pursuit of. I have known a flock of these birds alight on an apple tree, and have myself seen them twist off the fruit, one by one, strewing it in every direction around the tree, without observing that any of the depredators descended to pick them up. To a parakeet which I wounded and kept for some considerable time I very often offered apples, which it uniformly rejected; but burrs, or beech nuts, never. To another very beautiful one which I brought from New-Orleans, and which is now sitting in the room beside me, I have frequently offered this fruit, and also the seeds separately, which I never knew it to taste. Their local attachments also prove that food more than climate determines their choice of country. For even in the states of Ohio, Kentucky, and the Mississippi territory, unless in the neighbourhood of such places as have been described, it is rare to see them. The inhabitants of Lexington, as many of them assured me, scarcely ever observe them in that quarter. In passing from that place to Nashville, a distance of two hundred miles, I neither heard nor saw any, but at a place called Madison's lick. In passing on I next met with them on the banks and rich flats of the Tennessee river: after this I saw no more till I reached Bayou St. Pierre, a distance of several hundred miles; from all which circumstances I think we cannot from the residences of these birds establish with propriety, any correct standard by which to judge of the comparative temperatures of different climates.

"In descending the river Ohio, by myself, in the month of February, I met with the first flock of parakeets at the mouth of the Little Scioto. I had been informed, by an old and respectable inhabitant of Marietta, that they were sometimes, though rarely, seen there. I observed flocks of them, afterwards, at the mouth of the Great and Little Miami, and in the neighbourhood of numerous creeks that discharge

themselves into the Ohio. At Big Bone lick, thirty miles above the mouth of Kentucky river, I saw them in great numbers. They came screaming through the woods in the morning, about an hour after sunrise, to drink the salt water, of which they, as well as the pigeons, are remarkably fond. When they alighted on the ground it appeared at a distance as if covered with a carpet of the richest green, orange and yellow. They afterwards settled, in one body, on a neighbouring tree, which stood detached from any other, covering almost every twig of it, and the sun shining strongly on their gay and glossy plumage, produced a very beautiful and splendid appearance. Here I had an opportunity of observing some very particular traits of their character. Having shot down a number, some of which were only wounded, the whole flock swept repeatedly around their prostrate companions, and again settled on a low tree, within twenty yards of the spot where I stood. At each successive discharge, though showers of them fell, yet the affection of the survivors seemed rather to increase; for after a few circuits around the place, they again alighted near me, looking down on their slaughtered companions with such manifest symptoms of sympathy and concern, as entirely disarmed me. I could not but take notice of the remarkable contrast between their elegant manner of flight, and their lame and crawling gait among the branches. They fly very much like the wild pigeon, in close compact bodies, and with great rapidity, making a loud and outrageous screaming, not unlike that of the red-headed woodpecker. Their flight is sometimes in a direct line; but most usually circuitous, making a great variety of elegant and easy serpentine meanders, as if for pleasure. They are particularly attached to the large sycamores, in the hollow of the trunks and branches of which they generally roost, thirty or forty, and sometimes more, entering at the same hole. Here they cling close to the sides of the tree, holding fast by the claws and also by the bills. They appear to be fond of sleep, and often retire to their holes during the day, probably to take their regular *siesta*. They are extremely sociable with and fond of each other, often scratching each other's heads and necks, and always at night nestling as close as possible to each other, preferring, at that time, a perpendicular position, supported by their bill and claws. In the fall, when their favourite cockle burrs are ripe, they swarm along the *coast* or high grounds of the Mississippi, above

New-Orleans, for a great extent. At such times they are killed and eaten by many of the inhabitants; though I confess I think their flesh very indifferent. I have several times dined on it from necessity in the woods; but found it merely passable, with all the sauce of a keen appetite to recommend it."

But the most interesting of all the subjects contained in this volume is the account of the pinnated grous, with an admirable rich and picturesque drawing of the male bird, sketched and coloured from the life, in his strutting attitude. To the sportsman and epicure, this article will afford a pleasure scarcely, if at all inferior to that derived from the field and the table: and the naturalist may sympathize with them in the luxury of beholding the picture, and studying the character of this superb bird, during the intervals of shooting and eating. See p. 104—118.

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

To the Editors of the Medical Repository.

If the following articles are deemed of sufficient importance, you are at liberty to give them a place in your valuable publication.

AARON C. WILLEY.

Block-Island, June 25, 1810.

1. Ovo-Viviparous Generation.

In Med. Rep. Hex. II. vol. 2, p. 78, is related the discovery of the ovo-viviparous generation of the shark. But this is not the only inhabitant of the waters in which this law of propagation obtains. The dog-fish multiplies its species by the same process. It is caught in abundance, off this Island, by the fishermen employed in taking cod, by whom it is eviscerated to get the livers, for the making of oil. I have had frequent opportunities of examining it, and find that the figure given of the fetus of the shark, in the 80th page of the above-mentioned volume, bears a great resemblance to the appearance of the young of this fish, when dissected from the womb.

2. Odours.

That the fetor of the skunk, *(viverra putorius)* is capable of affecting the olfactory nerves at a great distance, is a well known fact. But it is sometimes borne in the air to a much greater distance than is generally imagined. This I am enabled to assert from the following circumstance. The skunk is not a tenant of this island, nor has been for many years; but on the adjacent part of the continent he is numerous. Yet it is an occurrence, not unfrequent, to smell him here, when there is a light breeze from the northward. I have had my nostrils assailed by a considerable strong stench, when upon the south part of the island, at which

time I must have been at the distance of twenty miles, at least, from the animal that emitted the odour.

3. Fact relating to the history of Ambergris.

The origin of ambergris has been a subject of speculation from early ages. Various opinions have been advanced to account for its formation. A notion, however, has long prevailed that the whale, especially the physeter macrocephalus, was concerned in its production. This was espoused and defended by Justus Klobius, Dr. Boyston, and Mr. Dudley. But the arguments and evidence they were able to bring forward, have not been sufficient to allay disputes. The following fact, related to me by a gentleman with whom I am intimately acquainted, and whose veracity I have no reason to doubt, may tend to throw some light on the matter in question. It coincides with the relation given to Dr. Mitchill by Jared Coffin, Esq. respecting the same subject. (Med. Rep. Hex. II. vol. 1, p. 417.) He informs me that he assisted in taking a spermaceti whale, in 1784, off Acapulco, in which were found two pieces of ambergris, weighing together $7\frac{1}{2}$ lbs. It was pent up in the intestinum rectum, and filled with the beaks of the sepia, or *squid*. The fish was a male. This drug was carried into Pisco, a port town in the province of Lima, and sold for four dollars and a half the ounce. He is firmly of the belief that this odorous drug is the fecal matter of this species of whale, when in a state of constipation. He supposes that this whale was in the act of discharging the indurated excrement when first discovered, as it appeared in a state of unusual agitation, as if in much distress. The captain of the ship informed him that he caught one the preceding season, which contained 150 lbs. of this substance. A part of it was in a state rather soft. It is certain, however, that the finding of ambergris in the whale is very rare. My informant has been eleven voyages a-whaling, and this is the only instance of his meeting with it. Another gentleman, with whom I have conversed, and who has followed the business twelve years, has never found it, although careful to examine the whale for that purpose.

4. A Living Worm in an Abscess.

Mr. Stephen Chappel, of South-Kingston, in this state,*

* Rhode-Island.

aged about seventy, was, in the summer of 1806, seized with an affection in the right groin, resembling a venereal bubo. He applied poultices of various kinds in order to promote suppuration. These were persevered in for about three weeks, but still growing worse, without any signs of the formation of pus, recourse was had to medical assistance. *Dr. Hazard*, of that town, was called in upon the occasion. He found the patient emaciated, weak, and feverish, with some nervous symptoms. The tumor was large, florid, without any appearance of suppuration, and excessively painful. The doctor pursued the mode of treatment commonly adopted in cases of phlegmonic swellings. This was continued for about a week, when perceiving the tumor to become more soft, acquire a more livid colour, accompanied with an oozing out of ichorous fluid, he laid it open with a common lancet. The matter discharged was similar to that exuded through the skin before incision. Viewing it attentively, he discovered an undulating motion in the contained matter, like that arising from the movement of some living creature. When on examination with a probe, he raised into sight a worm, which was immediately extracted. It bore an exact semblance of the *Lumbricus*, or round worm of the bowels, was about nine inches in length, and very active. The phenomenon was witnessed by a large number of respectable characters.

How this animal came there, remains a subject of physiological inquiry. It could not possibly have gotten there from the intestines, as there were no signs of intestinal adhesion, or any appearance of inguinal hernia. The case, however, bears some analogy to that related by *Dr. Archer*, in Med. Rep. Hex. II. v. 6, p. 365. And, to adopt an idea suggested by that gentleman, may be considered as one of the "aberrations of nature."

5. Jack O'Lanthorn.

I purpose to send you, shortly, an account of a singular and curious phenomenon which is sometimes seen on the ocean near this place. It is a wandering, lambent flame, which has long astonished ignorance and superstition, and I believe, will not a little rack the ingenuity of philosophy to afford a satisfactory explanation.

Meteoric Stone that fell in North-Carolina in Jan. 1810.

Extract of a letter from Bishop Madison, to Mr. Girardin, of Richmond, dated Williamsburg, 27th November, 1810.

"I have lately received the stone which fell in North-Carolina, in January last, weighing 3 lbs. It resembles in appearance the meteoric stones of Europe, and those which fell in Connecticut in 1808, of which there is a minute account in the last volume of the American Philosophical Transactions. But this stone has a peculiarity, which I have not seen noticed in any other of the kind. It not only acts and is acted upon by the magnet; but is itself a real magnet, having its distinct north and south poles; and consequently all the other properties of the magnet, though in a weak degree; a state, in which the natural magnet is often found; a strong additional presumption, is thus afforded, that the stone is of terrestrial origin.

"I sent queries to North-Carolina which have been answered by a gentleman of character, who heard the explosions; and it is surprising, how nearly several of the phenomena coincide with those observed in Connecticut."

The Bishop's opinion is; that these meteoric stones have been projected from the volcanos of the earth—he coincides with Mr. Wood in the idea, that they fall so far from the volcanos, on account of the same point of the earth moving with different velocities in a diurnal rotation.

[*Ritchie's Richmond Inquirer.*

Proportion of the precious metals in the Gold and Silver coins now in circulation.

Mr. Gallatin, Secretary of the Treasury, in his letter to the Honourable Mr. Quincy, of 17th Dec. 1810, after referring to assays made at the mint, during 1809, proceeds thus:

"It appears from those assays that the intrinsic value of all foreign coins, the gold coins of Spain excepted, which were made a legal tender by the act of 10th April, 1806, either agrees precisely with the legal value fixed by that act, or differs from it by so small a fraction, as to render any alteration in that respect unnecessary. But the difference in the value of Spanish gold coins is considerable.

"It will be recollected that the value of gold coins of the United States is established in conformity with the following principles, viz.

"1. The unit or silver dollar contains $371\frac{1}{4}$ grains of pure silver.

"2. The comparative value of gold and silver is in the ratio of 15 to 1; that is to say, that fifteen ounces of pure silver are, according to law, equal in value to one ounce of pure gold.

"3. The standard gold, or that of which gold coins of the United States are made, contains eleven parts of pure gold and one part of alloy; or $\frac{1}{12}$ part of its weight is alloy.

"Thence it follows, 1st, that $24\frac{3}{4}$ grains (being the 15th part of $371\frac{1}{4}$) pure gold are equal to one dollar; 2dly; that 27 grains of standard gold of the United States, containing $24\frac{3}{4}$ grains pure gold, are also equal to one dollar.

"In fixing the rate at which foreign coins should pass, the object was to ascertain the standard, or quantity of pure gold contained in a given weight, and to place them according to that intrinsic value exactly on a par with coins of the United States.

"The act of 10th April, 1806, was predicated on the supposition that $27\frac{8}{9}$ grains of Spanish standard gold contained $24\frac{3}{4}$ grains of pure gold, and were therefore equal in value to 27 grains standard gold of the United States, or to one dollar current money of the United States. But that supposition is proved by the assays to have been erroneous, the standard of Spanish gold coins being worse or containing more alloy than was then believed. That standard varies according to the years of the coinage. The coins of the year 1806, are the lowest and worse by more than four and a half per cent. than the value fixed by the act of 10th May, 1806. Those of the year 1807, are worse than those of the years prior to 1806; and those of the year 1808, are worse than those of 1807. Those of the years prior to 1806, though better than the subsequent coinages, are almost $3\frac{1}{2}$ per cent. worse than the value fixed by the act of May, 1806.

"Taking the general average of the several coinages it appears that they should be taken at the rate of $28_{\frac{51}{100}}$ grains (instead of $27_{\frac{40}{100}}$) for one dollar; and that the difference between their intrinsic value, and that fixed by the act of April, 1806, is almost four per cent. ($3_{\frac{986}{1000}}$) per cent.)"

Afterwards, in his letter of 24th Dec. 1810, he observes, on the assays for 1810:

"This year's make the average for French gold coins $27\frac{11}{100}$ grains, and for Spanish ditto $28\frac{62}{100}$. It must also be observed, that French crowns were rated too low. Instead of its being necessary that they should weigh 18 pennyweights and 17 grains, they ought to be received if weighing 18 pennyweights and $15\frac{1}{2}$ grains; it appearing from the assays that, if of the first mentioned weight, they are worth 110 cents and $\frac{16}{100}$ of a cent, instead of 110 cents."

This information was called for by the select committee of the house of representatives, consisting of Messrs. Quincy, Mitchill, Pitkin, Newton, and Seybert, to whom was referred a bill from the senate, reviving the expired statute for making foreign coins a legal tender within the United States.

The quantity of Gold and Silver contained in the circulating Coins.

From the Report of Robert Patterson, Esq. director of the mint, to the Secretary of the Treasury, dated Philadelphia, Dec. 19, 1810, the following information is derived:

The gold coins of Great Britain and Portugal are found to be, from 1806 to 1810 inclusive 22 carats fine.

Within the same time the gold coins of France have not been finer than 21 carats $2\frac{3}{8}$ grains, and sometimes did not exceed 21 carats $2\frac{1}{4}$ grs.

In the same period, the gold coins of Spain have never exceeded 20 carats $3\frac{1}{2}$ grs. of fineness, and have sometimes, particularly in 1806 and 1809, been as low at 20 carats $2\frac{3}{4}$ grains.

By an assay made on the silver coins of France, that five crowns of promiscuous dates gave 10 oz. 19 dwts. 00 grs. of pure silver, and three five-franc pieces of promiscuous dates gave 10 oz. 15 dwts. 00 grs.

In like manner, the assays made on the silver coins of Spain, to wit dollars and their parts, showed that prior to 1806, during that year and so on to 1807 inclusive, five dollars afforded 10 oz. 15 dwts. 06 grs. of pure silver, while from 1808 to 1810 inclusive the weight of unalloyed metal in that number of pieces was 10 oz. 15 dwts. 12 grs.

From all which operations and experiments Mr. Patterson draws the following inferences, to wit:

1. That the gold coins of Great Britain and Portugal, being of the same quality with those of the United States,

viz.: 22 carats fine, or $\frac{1}{12}$ part alloy, are by the act of Congress rated at their true intrinsic value of 27 grains to the dollar, or 100 cents.

2. That the gold coins of France, averaging 21 c. $2\frac{1}{2}$ grs. (very nearly) would require $27\frac{52}{100}$ grs. to the 100 cents, instead of the legal weight of $27\frac{40}{100}$ grs.

3. That the gold coins of Spain, averaging about 20 c. 3 grs. would require $28\frac{62}{100}$ grs. to the 100 cents, instead of the legal weight of $27\frac{40}{100}$ grs.

4. That the silver French crown, weighing, as the law required, 18 dwts. 17 grs. and of the quality of 10 oz. 19 dwts. as per assay, would, compared with the quality and weight of the silver coins of the United States, be equal in value to about $\frac{36}{100}$ parts of a cent more than that established by law.

5. That the Spanish silver dollar of the legal weight of 17 dwts. 7 grs. and of the quality of 10 oz. 15 dwts. 6 grs. the average, per assay, would, by a like comparison with the silver coins of the United States, be equal in value to about $\frac{23}{100}$ parts of a cent more than the value established by law.

It may, however, be observed, that the foreign silver coins, especially those that have been long in circulation, are seldom of the above weights; and therefore their value, as current by tale, will be generally less than that stated above.

Earthquake in Georgia.

President Meigs, of Georgia University, in a letter dated Athens, Jan. 21, 1811, writes thus:

"We have had an interesting phenomenon—an earthquake—the first I believe that has been felt here since the settlement of Europeans. It happened at about 2, P. M. on Sunday, the 13th instant. I have paid some attention to the collection of facts which you will find in the inclosed extracts from the newspapers of this village.

"The extent we know already was equal to a circle of about 60 miles radius.—I expect to hear more about it.—It is worth mentioning that our tornadoes generally take a direction towards Cape-Hatteras; the cape of eternal storms. I tell these people that I should not be surprised if old ocean, or rather the Gulf Stream should one day take a short cut from Mobile or Pensacola, or some point further

east, and drive its way through our flat country, so as to inundate Savannah, East-Florida, &c. The sea once covered that tract. I have been in a lime-stone cave, near Saunderville, about 70 miles from this, south-easterly, and recognized a perfect similarity in the petrifactions of the asterias, &c. with the caves of Bermudas. The oyster-shells are very large, and indicate their brotherhood with the blue-point-oyster of the New-York market.

A slight shock of an earthquake was felt in various parts of this county, and in Oglethorpe, Hancock, Wilkes and Greene, and in Milledgeville, on Sunday last, at about 2 o'clock in the afternoon. As this is a very interesting phenomenon, and, we believe, the first of the kind known in Georgia since the settlement of Europeans, we hope that such notice of it has been taken as will enable us to determine its direction.

Extract of a letter from Mr. Jackson, of Louisville, to his friend in this place, dated January 15.

"We have been alarmed by three or four shocks of an earthquake felt here on Sunday last—the day was uncommonly fine and calm—not a cloud was apparent in the sky—not a breath of wind was stirring. Between two and three o'clock a distant rumbling like thunder was heard, and instantly followed by a shaking, which lasted but two or three minutes:—It was sufficiently violent to shake off the top of a chimney, and to roll tumblers off the dining tables. From my sensations at the time it appeared to come from the south-west, which is the course our tornadoes generally take. Can the same causes govern both? There must I think; be a coincidence between the two—their direction being the same—and as a further proof that such is the case, directly after the shock, a gale sprung up, accompanied by heavy clouds from that quarter, the S. W. which covered the whole horizon in a few minutes. In the evening, and first part of the night, three more shocks were sensibly felt by the inhabitants of Louisville, though not so severe as the first."

A View of the Progress of the Post-Office Department, from the 3d of March, 1801, to the 10th of February, 1811.

Periods.	Number of post-offices.	Length of the post-roads.	Weekly transportation of the Mail in carriages furnished for the accommodation of travellers.	Weekly transportation of the Mail in sulkies and on horseback.	Amount of the weekly transportation of the Mails.	Amount of the yearly transportation of the Mail.
Feb. 10, 1811.	2,403	Miles. 37,035	Miles. 46,380	Miles. 61,171	Miles. 107,551	Miles. 5,592,652
March 3d, 1801.	957	21,840	24,490	34,380	58,870	3,057,964
Increase under this administration.	1,446	15,195	21,890	26,791	48,681	2,534,688

MOORE'S *Dissertation on curing certain Diseases of the Stomach, by the White Oxyd of Bismuth.*

AN ingenious dissertation was published in November 1810, "on the medical virtues of the white oxyd of bismuth; with some preliminary observations on the chemical properties of that metal." The author is Samuel W. Moore, A. B. And he exhibited it, as a proof of his professional acquirements, when soliciting the degree of doctor of physic. Being a full believer in its power to relieve, and eventually to cure heart-burn, and other painful affections of the stomach, he has gathered from almost every source, the fragments of information that had been printed on the subject from the time that *Odier* of Geneva begun to prescribe it, in 1786, to the date of *Clark's* Medical Report for Nottingham, in 1809. He has likewise given abstracts of the cases published by Drs. *Marcet* and *Bardsly*, wherein this remedy was administered. And to all these are added some encouraging cases in which it was directed to be taken for disordered stomachs, by the author, and his worthy father, William Moore, M. D. and Vice-President, of the county medical society of New-York. We feel pleasure in remarking the correctness with which he has stated the chemical properties of bismuth, and the mode of preparing the white oxyd. The diseases for which it is chiefly recommended are gastrodynia, cardialgia, and pyrosis. It is prepared by precipitating it from its solution in nitric acid, by much pure water. The common dose is five grains thrice a day, with a little gum-tragacanth, gum-arabic, starch, or sugar.—In short, we need say no more than that this inaugural essay is an excellent repository and index of the principal information extant, concerning the magistery of bismuth as an article of the materia medica.

ONDERDONK'S *Recommendation of the Bistoury in Lithotomy, as an instrument preferable to the Gorget.*

THE enterprizing author of this dissertation is Henry U. Onderdonk, a gentleman who has pursued professional objects, more particularly anatomy and surgery, in London, for some time past. During his attendance in the hospitals

there he became convinced, that the *bistoury* was an instrument superior in principle, to any he had seen used. His attention is carefully directed to the employment and advantages of this instrument. For making the second incision, he condemns the gorget, as being less safe and convenient, by reason of its shape, and of its dividing the parts as it is thrust in. But he commends the bistoury, which being introduced without cutting, makes an incision as it is withdrawn, of the exact extent which the operator chooses. He compares the *curved bistoury* of A. COOPER, *having a beak projecting from its point*, with the *strait knife of* T. BLIZARD, *rounded for three fourths of an inch from its point, with a beak slightly turned up, to be more readily fitted into the groove of the staff.* On the whole, he decides in favour of the latter. And to render its form and construction more plain, he has embellished his treatise, with two engravings of Mr. Thomas Blizard's bistoury for lithotomy.

To bring this instrument into use, seems to be the author's chief intention. But he has done more. He has accompanied the description and recommendation of his knife, with the history of the disease for whose removal it is proposed. Hence his title is that of an inaugural dissertation "on the stone in the bladder." And it may be fairly remarked, that in his researches concerning the matter of urinary calculi—of the symptoms denoting their presence—their causes and cure—the method of detecting them—the anatomy of the parts concerned in the operation, and other particulars, the author appears to have employed that industry and judgment which is highly reputable to him.

Another expedition to the north-west coast of America.

THE measures adopted by our government to explore the continent of North America quite across, from the Atlantic to the Pacific, were detailed in our vol. 7, p. 406, and seq. Again, various information from the most respectable sources, to wit, Messrs. Dunbar, Hunter, Soulard and Frudeau, was displayed in vol. 9 ps. 305-318.—Afterwards in vol. 10, p. 27, 44, and 165---174, much other intelligence from Messrs. M'Kay, Stoddard, Lewis, and Clarke, was offered, as was also the abstract of Messrs. Lewis and Clarke's Journey, as communicated by the former of these enterprising gentle-

men, immediately after his return,' ibid. p. 288—291. Since which, in our vol. 11, accounts have been published of the observations and discoveries related by Mr. Gass and Major Pike. The curious inquirer will also find an original account of Capt. Kendrick's discoveries on the north-west coast, in vol. 10, p. 424, as well as an abstract of Meases's and Vancouver's voyages in that region, ibid. p. 420—423.—He will also read with interest, Mr. Campbell's character of the country west of the upper Mississippi, and along the great bend of the Missouri, in our vol. 11, p. 200—201.

The information derived from so many, and such authentic sources, has exceedingly strengthened the spirit of adventure. As stated in vol. 10, p. 290, there are great numbers of wild animals in the deserts of Louisiana, inviting the hunter to kill them for their skins. Capt. Lewis considered the most important objects likely to result from his journey through those inhospitable tracts were, 1st, the augmentation of the fur-trade; 2nd, its management by citizens of the United States; and 3d, the facilities it would receive by being carried on from a factory to be established on the Columbia River, directly across the Pacific Ocean, to China.

Pursuant to the opinion Capt. L. had formed of the importance of this traffic, he undertook to patronize an expedition for the purpose soon after his appointment to the government of Louisiana. But the outfit being not well organized, nor sufficiently large, the project failed: and this disaster may be viewed as one of the untoward events which impelled that worthy, but unfortunate man to the desperate act of suicide.

About the year 1805, certain persons in New-York conceived the plan of forming a Company to trade to the W. and N. W. for furs. It was supposed that the business might be conducted under better auspices from New-York than from Montreal. On application to the Legislature of the State, an Act was passed early in 1807, incorporating certain persons under the title of the American Fur-Company.

The government of the nation was sounded on the subject, but no public act in reference to it, was obtained.

Afterwards the establishment, claims, stock, and interest of the N. W. Company of Montreal, as far as it was engaged in trade, on or through lake Michigan, the Sioux country, and every where along the Missouri, or within the limits of

the U. S. territory, appeared to have been in some measure assimilated with those of certain citizens of the U. S.

This being understood, further steps were taken. One of these was to send a party, chiefly of Canadians, from Montreal across the continent, by the way of the lakes and the Missouri, to the Columbia River. And another was to equip a ship, to sail from New-York, with a body of Canadians on board round Cape Horn, and meet them there, to receive their furs, and supply them with stores. If no disaster should befall them, it may be expected that a factory will be established and a colony founded. The adventurers, among whom is the brave Jonathan Thorn, have carried with them a good stock of garden-seeds.

The Montreal Courant announced that on the 5th July, 1810, Mr. Donald Mackenzie embarked at La Chine, accompanied by Mr. Wm. P. Hunt, and a crew of sixteen men, in one canoe, on a journey to the north-west coast of this continent, for the purpose of opening a new trade.

And shortly afterwards it was published in Albany that Mr. M'Kay, who accompanied Sir A. Mackenzie on his famous tour to the Pacific Ocean and the North Sea, passed through those places on his way from Montreal to New-York, with thirteen men, in the same employ. These persons proceeded thence with their baggage in one bark canoe, which they brought with them. They sailed early in September, to proceed by the way of Cape Horn, from New-York, to meet their brethren on the shore of the western ocean. If circumstances should be favourable, this may be the germ of a new nation or empire in North-America.

The practicability of traversing the continent of North America has been once more proved. The following extract of a letter from a gentleman at Natchez to his friend in Norfolk, dated June 20, 1810, contains an outline of such an adventure.

"Your friend W——has overtaken me. He informs me, that in descending the river he fell in with a party of four men, (or rather heroes) who, after suffering shipwreck on the north-west coast, had not only the spirit to plan, but courage to attempt, and fortitude to persevere and succeed in one of the most daring undertakings I ever have heard of, viz —*A journey across the continent, from the Pacific to the Atlantic Ocean, with no other provision than their guns, with six pounds of powder, and twenty pounds of shot.*—

Incredible as this circumstance may appear, the short account given by the head of the party, Mr. Baptiste Lavall, to Mr. W——, carries the strongest evidence of the facts.

"Mr. Lavall was born in the city of Philadelphia, but removed to Canada at the close of the war, where he was engaged in the fur-trade. But having fallen heir to an estate, he went to England to receive it, and there embarked on a trading voyage, to the north-west coast, on board the schooner Sea Otter, of 170 tons, and commanded by John Niles;—that he was part owner as well as supercargo;—and on the 22d of August, 1808, the vessel, cargo, and nine men were lost in a violent gale, about 200 miles south of Columbia River; while he, together with Michael Connor, Jean Lozier, and Emanuel Silver were providentially saved by being absent, on a hunt, on an uninhabited island. That after waiting some time in hopes of meeting with some vessel, they gave up that point in despair, when he prevailed on his company to attempt to cross over the continent by land. That after passing through an endless number of strange and savage nations, amongst whom they were often detained as prisoners, and suffering every privation and hardship that it was possible to endure, they happily succeeded in accomplishing their desperate undertaking."

Naturalization of the American Tulip-tree in Europe.

Mr. de Hildenbrand, clinical professor in the University of Vienna, after having tried in vain to find a substitute for Peruvian bark in intermitting fevers, among the different indigenous vegetables of Germany, at length turned his attention to the white wood or tulip-tree, (*Liriodendron tulipi-fera.*) It had been long employed in America as a remedy, in lieu of the cinchona. The Austrian professor confirms this experience. In his trials made comparatively with the quinquina, the bark of the tulip-tree succeeded five times in six, although it had been peeled when the tree was in full flower. Indeed, this bark, besides being very aromatic, contains a large proportion of the bitter and tanning principles.

The superb tree which produces it, says the Bulletin des Sciences Medicales, though a native of North-America, is so easy to naturalize, that there are already at Schœnbrunn

nine of them, which are more than fifty years old; and five of the number have arrived to the size of stout oaks. The various other imperial gardens contain about 180,000 plants, the offspring of the trees of Schœnbrunn. And in the estates of the prince of Lichtenstein, there are growing more than 200,000 raised from American seed. So that in 25 years it may be expected that Austria will contain whole forests of tulip-trees. The mansion of the late Mr. de Tschoudic, near Metz, was adorned with abundance of these trees, as large as those in the United States. They have also become pretty common in France.

History of American Insects.

Mr. Thomas Say, of Philadelphia, proposes to publish a work on Entomology. It is his intention to comprehend both natural descriptions and drawings of the insects in North-America, and more especially those inhabiting Pennsylvania. The work will appear in numbers, on imperial quarto paper, each number will contain six coloured plates, with corresponding explanations, at the price of six dollars. A number will appear once in three months. Four of them will form a volume, and five or six volumes will complete the work.

So many of the insect-tribe are directly or indirectly injurious to the human race, that their history deserves the most early and minute attention. The damage done by them to trees, herbs, grass, fruits, timber, wool, meat, grain, and to the human body itself, is incalculable. For example, the locust-tree-bugs, the wheat-insects, the canker-worm, the apple-piercer, the wood-borer, the different sorts of moths, the larder-spoiler, the weavil, and the different sorts of flies, with a multitude of other creatures of this class, are worthy of being more particularly known to farmers, gardeners and house-keepers, and indeed to all orders of persons, than they are at present.

Inasmuch as this branch of natural history has been hitherto treated with too much indifference and neglect, we heartily hope that Mr. S. will convince the public of its

great usefulness and importance. The ABBE PLUCHE has shown how interesting the study of entomology may be made; and we shall rejoice to find a spirit similar to that which breathes through the *spectacle de la nature*, animating the pages of the present work.

Barometrical calculations, by Lieut. Alden Partridge, of the corps of Engineers, and Professor of Mathematics in the Military Academy, of the altitudes of the most elevated parts of the Catskill Mountains above Hudson's River, and above their bases. Communicated by Col. Jonathan Williams.

Altitude of	Round Top—above the river,	3566 Feet
	High Peak—the same,	3486½
	Highest part of the turnpike, the same,	2273¼
	Round top above the base of the range of mountains,	2911
	High peak above the same,	2831
	Highest part of the turnpike the same,	1630
Altitude of	the base of the range of mountains above the river,	655
	Round Top above its own base,	1550
	High Peak—the same,	1470
Whole altitude of the high falls,		310½
	first fall 190	
	second do. 120½	
	310½	

N. B. The highest part of the Alleghany in Virginia, near the Sweet Springs, is not 3000 feet.

Barometrical calculation of the altitudes above the River, of Butter Hill near West-Point.

Stations.	Thermometer. detached.	Thermometer. attached.	Barometer	Remarks.
	°	°	In-100	
On the plain.	78	73	29 50	lower
Top of the hill.	87	94	28 33	upper
	165	21 diff.		

82½ mean

Standard 31

diff 51½ As 9600 : 21 :: 29 50 : 06

06

Logarithms

29 50—4,707044

28 33—4,522466

Fathoms Fathoms

As 435: 5 1½:: 184,578: 21,852 F. 184,578

21,852

206,430

6

1238,580 feet

add 18 feet height of barometer above ground

1256,580 feet above the plain of W. Point

176 altitude of the plain above the river

Feet 1432,580 altitude of Butter Hill above the [River

N. B. The altitude above calculated takes 31° of the thermometer, as the standard of calculation by Logarithms. See Hutton's Mathematics, vol. 2, page 237, 238, 239 and 248.

Barometrical calculations of the height of a Mountain near West-Point, called Bull-Head, on the east side of the river.

Stations.	Thermometer. detached	Thermometer. attached.	Barometer.
	°	°	
Edge of the river.	69	64	29. 70 lower
Top of the mountain.	72	67	28. 30 upper

Calculated as the other 1390 9-100 feet above the River.

A peculiar Earth found in Vermont, promising to be useful in the manufacture of Porcelain.

The following information comes from Samuel Dakin, Esq. of Jaffrey, in New-Hampshire: in a letter dated 6th December, 1810.

About fifteen years ago, two men were digging for iron ore, in the town of Monkton, in Vermont; and about four feet beneath the surface of the earth they discovered a white substance, which when dried, very much resembled white lead. This discovery excited considerable curiosity among the people in the neighbourhood, but none had any adequate ideas of the use and value of the material, nor entertained any notions of experiments to ascertain the qualities of it. It was merely talked of as a thing which might possibly be of some use. The bed, thus discovered, was however penetrated about twenty-five feet deep, and the white material was observed to be more pure the farther the pit was sunk.

Several years afterwards, some potters in the neighbourhood mixed this white substance with common clay, and formed it into vessels and burned them in the usual way of burning earthenware. On taking the vessels from the kiln, they were found to be extremely hard, and apparently much more durable than ware made of the common clay alone. The hardness of the vessels thus made is to such a degree, that a broken piece brought into collision with steel, will emit sparks of fire like the flint, very freely and plentifully.—This ware, thus compounded and made is found to be very useful and durable, and considerable quantities have been manufactured.

It was not till about eighteen months since that any ideas of the use of the material were entertained beyond that of making stone ware, by mixing it as before observed. Some experiments have since been made, the result of which has induced the present proprietors to suppose that the white material is very similar to that of which porcelain ware is made in France. They are the more inclined to the belief of this supposition, because a small mass has been submitted to the action of fire, and it has formed into a solid flinty substance, retaining its whiteness. Its white appearance is not destroyed nor altered by burning.

This material is found on the eastern side of a hill rising in an angle of about forty degrees, and is deposited in *strata*, having a variable number of degrees of northern depression. The strata are intersected with veins of pure white flint sand. Flint stones are also found in abundance near the surface: and from the examinations which have been made, the quantity may be said to be nearly inexhaustible.

The chemical experiments hitherto made are very imperfect, for want of proper means. I have therefore enclosed a small quantity of the material in the same state in which it was taken from the ground, except its being dry and pulverized.

If you have leisure, and should think it worth your attention to make an analysis of it, and will be pleased to communicate to me the result, and your opinion of the material and its probable usefulness in manufactures as soon as convenient, you will not only confer a great favour on those concerned, but may render an essential service to the manufacturing interest.

There is a company formed and incorporated in Vermont, by the name of the Monkton Argil Company. Their object is to set up the manufacture of crockery and porcelain-ware, when they shall have obtained full evidence that the material is of that kind which will justify the undertaking. For this purpose, the company are very desirous of obtaining the result of experiments, and the opinions of men of science and information.

I am, Sir, with much respect, your very
humble servant,
SAMUEL DAKIN.

P. S. It is to be observed that the sample enclosed is the

most free from flint sand which could be procured; and that the same was taken from the pit by myself, in July last.

S. D.

Since I wrote you on this subject, I have been favoured with an answer from Doctor Benjamin Rush, of Philadelphia, to my letter to him of similar import with that which I wrote you, and enclosing a specimen of the white clay. His letter is in the most friendly and encouraging terms, and I cannot deny myself the pleasure of giving you a copy. It is in these words.

"*Philadelphia, Dec.* 17, 1810.

"SIR, I submitted the powder you enclosed to me to the examination of Mr. Joseph Cloud, the melter and refiner of the mint, and an excellent mineralogist and chemist; and I feel great pleasure in informing you that he has pronounced it to be the *true kaolin* or *feldspar*, in a state of decomposition, and *in every respect* equal to a specimen of French *kaolin* in his possession, of which, in combination with the *petunse*, the French China is made.

"I congratulate you upon this discovery, and sincerely hope it may be alike beneficial to the persons who have made it, and to the United States.

"From Sir, your's, very respectfully,

"BENJAMIN RUSH."

Correction of a vulgar error in relation to the poisonous quality ascribed to pounded Glass.

In the year 1810, Mr. Lesauvage of Caen, published in Paris a dissertation, entitled *Recherches, &c. Researches on the Operation of Glass and of Vitriform Substances, on the inside of the Digestive Organs.* After a learned exhibition of the prejudices which have prevailed among writers, ancient and modern, on the noxious effects of powdered glass, diamond dust, and pounded flint, he proceeds to show their fallacy by facts. He relates the case of a man who in 1808 champed between his teeth a drinking glass, and swallowed it without experiencing any harm from it. He tells the story of a young woman, who in a fit of despair, broke to pieces a crystal vase, and swallowed the fragments, without

suffering bad consequences. He assures his readers that he was eye-witness to a person who ate glass. This person bit from a glass a piece sufficiently large for his purpose; he then chewed and cracked it between his teeth for some time, and swallowed them, together with a glass of wine. The man declared he had learned this trick from two soldiers of the imperial guard, who after breaking up whole glasses in his presence, took the fragments into their stomachs without the smallest indisposition.

But to put the matter out of all doubt, he administered pounded glass to cats and dogs, in large quantities, with their food, and did not observe that they suffered any inconvenience from it. Indeed, pounded glass seemed equally innoxious, when of different degrees of coarseness, and even when of two or three lines in length.

As it had been generally believed that pounded glass was deleterious to rats, and had been long employed for their destruction, Mr. L. administered it, mixed with wheaten paste, to several creatures of this family, and did not discover that it incommoded them in any degree whatsoever.

Professors Chaussier and Dumeril, were witnesses of many of these experiments.

To put the question out of all doubt, this intrepid inquirer determined to try the action of pounded glass upon his own stomach. He swallowed it fasting, and after meals, in its acute and angular forms, and without mixture or disguise. He never experienced the smallest painful sensation, nor any danger whatever.

Whence he concludes, among other considerations, that the notion of *mechanical poisons*, acting by irritating and lacerating the organs is erroneous and unfounded. On the contrary, every thing proves that such a class has no existence in nature, and we are warranted in expunging them from the already too numerous list of venomous substances.

Botanical information concerning two Families of Plants.

Our friend and correspondent, C. S. Rafinesque Schmaltz, has, in addition to his former favours, given us a detailed view of the *genus* CALLITRICHE and of the *genus* POTAMOGITON, in a letter dated Palermo, April, 1, 1810.

I. Species of the genus *Callitriche.*

1. Callitriche plena.

Foliis inferioribus oblongis, distantibus, superioribus, ovali -subrotundis, approximatis, floribus monoicis.——Europa ad fossas, rivulos, &c.

2. Callitriche spuria, (Raf.—*C. verna* Mich. flora bor. Americana) foliis inferioribus linearibus, integris, distantibus, superioribus spatulati, obovatis, approximatis, floribus hermaphroditis.——America boreali, ad loca aquatica.

3. Callitriche intermedia (Wildenow Sp. pl.—Sahkuhr bot.—Vitman. Sum. pl.—*C. dubia*—Hoffman obs.) foliis inferioribus, linearibus, distantibus, apice bifidis, superioribus ovati, subspatulatis, approximatis, floribus monoicis——Europa & America boreali, ad fossas & loca aquatica.

4. Callitriche stellaria (Raf.—*C. autumnalis* Lin. & auctoris) foliis inferioribus linearibus, distantibus, apice truncatis, emarginatis vel bifidis, superioribus oblongis, subapproximatis, floribus hermaphroditis vel monoicis——Europa & Am. bor. locis aquaticis.

5. Callitriche foliosa (Raf.—*C. autumnalis*, Mich. fl. bor. Amer.) foliis omnibus linearibus, emarginatis, approximatis, floribus hermaphroditis.——America boreali, in locis aquaticis & lacustribus.

6. Callitriche cruciata. (Raf.) foliis omnibus linearibus distantibus, apice bidentatis, sinu obtuso, floribus hermaphroditis.——Pennsylvania, in aquosis.

7. Callitriche ovata (Raf.)—foliis omnibus ovato-subspatulatis, acutis, integerrimis distantibus, floribus hermaphroditis.——Pennsylvania, in aquosis.

8. Callitriche dioica (Petagni Init. Bot.—Vitman. Summa, pl.—*Call. fontana* Scopoli) foliis integris, crassiusculis, inferioribus, lanceolatis, & superioribus ovali subspatulatis. ——Italia, ad fontes, aquosa, &c.

9. Callitriche connata (Raf.—*C. brutia* Petagni Init. bot. —Vitmann sum. pl.) foliis omnibus linearibus, integris, connatis ,approximatis, intermediaribus subdistantibus, floribus monoicis.——In Sicilia & Calabria ultra, ad fluvios, aquosa, &c.

10. Callitriche terrestris (Muhlenberg Mss.) Caule humifuso, foliis omnibus petiolatis, ellipticis, obtusis, integris, crassis, enervibus, floribus monoicis.——In Pennsylvania, Nova Cesarea, Delawara, in locis humidiusculis.

II North American species of the genus Potamogeton.

1. Potamogeton tenuifolium. (Raf.—*P. lucens*, M. fl. bor. Am *nec non Linn.)* caule longissimo, foliis lanceolatis subsessilibus, integerrimis, acutis, spicis cilindricis.——America boreali.

2. Potamogeton epihydrum. (Raf.—*P. natans Var b.* Mx. fl. bor. Americ.) foliis ovali-lanceolatis, longepetiolatis, integris, obtusis, natantibus, submersis, subcordatis, spicis brevibus——Am. boreali.

3. Potamogeton diversifolium. (Raf.—*P. hybridum* b. Mich. fl. bor.) foliis submersis, linearibus, acutis, sessilibus, emersis, oblongo-ovalibus, natantibus, spicis cilindricis.——In Carolina, Virginia et Delawara.

4. Potamogeton foliorum. (Raf.—*P. gramineum* Mx. fl. bor. Am. nec non *Linn.)* foliis Sessilibus, anguste linearibus, obtusiusculis, spicis Sub. 4. floris.——In Carolina, Virginia et Delawara.

5. Potamogeton borealis. (Raf.—*P. marinum* Mx. fl. bor. Am. *nec. Linn.)* foliis Setaceis, crassiusculis, spicis terminalibus, interruptis.——Canada & Nova-Anglia

6. Potamogeton petiolaris. (Raf.) foliis linearibus, obtusis, longe petiolatis) spicis brevibus subcilindricis.——In Delawara.

7. Potamogeton filiforme. (Raf.) foliis filiformibus, longissimis, subsessilibus, acutis, spicis terminalibus paucifloris. ——In Delawara.

8. Potamogeton perfoliatum Linn. & Mich.——foliis amplexicaulibus, oblongo ovalibus, obtusis.

Antiquities at Onondago.

(From MITCHILL's tour to Niagara.)

SOME of the farms at Onondago carry strong evidence of possession by the Europeans, at a time considerably remote from the present. Iron, brass, and copper have been ploughed up in considerable quantities. Utensils made of these metals have been frequently found. Locks, and other parts of guns, kettles, and religious medallions, are met with commonly enough. There are likewise the

remains of huts or human dwellings, known by the bottoms of palisados yet found in the earth, by the ruins of cellars and foundations, and by the heaps evidently raised by the labour of men. Skulls, and other human bones are also found in such plenty and preservation as to afford satisfactory proof that men must have died there in great numbers, at a time not sufficiently distant for their bones to have crumbled to dust.

It has not as yet been generally understood what population it was which has left behind it so many vestiges of settlement and of art. Onondago was a central and famous place among the Iroquois. This nation consisted of five tribes; the Mohawks, Oneidas, Onondagos, Cayugas and Senecas. They were very powerful, and extended their sway over a great tract of country in all directions. They waged war with the Algonquins and Hurons: they carried their expeditions to the lands of the Miamis and Potowatamies: they spread the terror of their arms among the Mohegans; and they committed murder and other mischief in Pennsylvania, Maryland and Virginia. They appear to have advanced further towards a federative or associate government than any people of North America; for in matters of such general consequence as to affect all the tribes, their respective sachems held a general meeting for deliberation on their common concerns. Onondago was the place for these assemblies. It was about midway, between the villages of the Mohawks and Senecas; and this central situation was the seat of their national government.

To this seat of population and business, the Europeans turned their attention, soon after their colonies were established. Yet I have not found so much historical information on the subject, as might have been expected. From Colden, the professed historian of the Five Nations, very little can be derived. He seems to have known nothing of the remains of former settlements, now rendered so familiar. But CHARLEVOIX, the historian of New France, has recorded some events and proceedings which throw light upon this dark portion of time. He relates, (Tom. I. Liv. 7. p. 320) that in 1654, father Le Moyne was first sent by the French Governor of Canada, to Onondago. His errand was political: he being commissioned in the name of the Governor-General, to ratify a treaty then depending. In 1655, two other missionaries, *fathers Chaumonat* and *Dablon*,

were sent thither. They arrived at Onondago on the 5th November, that year.

In 1656, a project was formed of a French colony at Onondago; and fifty Frenchmen, under the command of the *Sieur Dupuys*, were assigned to the service. They arrived, after encountering great difficulties.

The Salt Lake was then known by the name of *Gannentaha.* There were grand ceremonies at the castle on the arrival of these adventurers. In 1658, they secretly withdrew, and abandoned their settlement, being alarmed for their safety.

In the autumn of 1661, father *Le Moyne* was again sent to Onondago, and persuaded the great chief *Garakonthiè* to accompany him to Quebec; and by his address, all the French prisoners were restored, in 1662.

The next important transaction that has come to my knowledge on this subject is, the French expedition against the Iroquois, and especially against Onondago, in 1696. It consisted of four battalions of French regular troops, and four of Canadian militia, under the command of *Mons. Subercase.* They proceeded up the Salt Lake, or Gannentaha, and landed and made their encampment near the Salt Springs. Thence they marched to the castle, through an incumbered and difficult country. But the Onondagos having been apprized of the expedition by a deserter, set fire to their village and ran away. They had a square fort, which they also ruined. The French then turned their course toward Oneida.

It appears, from several passages in this writer's work, that before 1693, the English had built a strong fort at Onondago. They made presents to the natives, repaired their losses, and encouraged them by all possible means to resist the French. In these proceedings they were generally successful. The governors of New-York were particularly active; but none with more effect than Thomas Dongan.

It thus appears, that within the period that this country has been colonized by the Europeans, both the French and English have had colonies, or establishments at Onondago. And although the details of their proceedings have not reached us, we nevertheless know enough to understand how so many articles of their respective manufactures should have been carried thither and left behind.

Description of the Sulphureous Springs in the county of Ontario.

(From the Same.)

In the town of Phelps, about eleven miles to the north-west of Geneva, are situated the sulphureous fountains of Clifton.

From a side-hill, in front of the public house, numerous springs discharge their waters. The stones and rocks through which they issue are calcareous. The main body of them are filled with the remains of testaceous animals, and marine exuviæ. Some of them are formed differently from any shells I ever saw. Their shapes are so singular and fantastic, that it is hard to refer several of them to any known or living species. There are likewise plentiful deposits of calcareous carbonate. This lime seems to have been held in solution by the water, and collects among the stones and other bodies where the current is gentle, or approaches to stagnation. It is associated with a portion of the sulphur deposited by the inflammable air.

The water issues in the greatest quantity from three principal sources. It is as abundant as from the most plentiful springs I ever saw. The water, as it comes forth, is perfectly transparent. But it soon becomes opaque, and of a yellowish colour, resembling a diluted mixture of cream with water. This hue appears, as it descends the declivity, and becomes still more manifest as it traverses the meadow, at the foot of the hill.

This yellowish matter settles on the rocks, stones, moss, and other plants. On being collected, it proves to be brimstone. It is in a state to be friendly to vegetable life. For though it covers the leaves and stems of the aquatic plants, over which the water flows, it seems to do them no injury. Though coated with sulphur, they enjoy entire health. There did not appear any sign of blackness or erosion from this cause, on the blades of grass which were constantly exposed to it.

The water is equally friendly to the life of animals. Horses drink it freely, and without any inconvenience. Other domestic creatures do the same, and are refreshed as much by it, to all appearance, as by common water. Human beings also drink it, without any bad effect. In some,

it excites a little nausea, especially upon an empty stomach. But this seems to arise from the offensiveness of sulphur to the smell and taste of such persons, rather than from any thing deleterious in the water. A fisherman assured me that he had taken trouts with the hook in this sulphureous brook. And it cannot be well supposed that there should be any thing very disagreeable in the water, voluntarily visited by such delicate and dainty fishes. They probably are induced to approach the source, for the purpose of feeding upon certain species of worms, (one of which has some resemblance to leeches) which adhere in great numbers to the lower sides of the stones. This water is their residence, and the trouts probably enter it to make a prey of them.

The deposits of calcareous and sulphureous matters are not the only things which distinguish these springs. A great quantity of vapour escapes from them. This rises to a considerable height, and may be smelled many rods to leeward as you approach. The odour is that of inflammable air holding sulphur in solution. In the ordinary condition of sulphur, the hydrogen is too small in quantity, relatively to the sulphur to rise with it into the atmosphere. But when the proportions are reversed, and the hydrogen is in a very large ratio to the sulphur, it carries away with itself a portion of that material. Upon the same principle that an absolutely large body of inflammable gas can elevate a balloon, a relatively large portion of it can carry up atoms of sulphur. These are wafted about, and diffused through the air.

Though the water, when it first rises from the earth is perfectly clear, yet as was before observed, it soon becomes turbid. This probably happens in consequence of the escape of the inflammable air, leaving behind that portion of sulphur which it is unable to carry off: and this disengaged sulphur first changes the colour of the water, and then settles on the leaves, grass, and stones. In consequence of this copious extrication of gaseous matters, the water is cold; and it contains some ingredient, which is probably a little uncombined sulphuric acid, which decomposes soap. For on attempting to form a lather with it, curdles were immediately produced.

At a short distance, less I should think than a quarter of a mile, and on the other side of the road, are other sulphureous oozings. In these, the water is small in quantity. The sulphuretted hydrogen immediately escapes: the sulphur

which it does not carry off with it, is left behind. There being too little water to wash it away, it accumulates in beds or sloughs. This is also on a side-hill: but, notwithstanding the favourableness of the situation for carrying away the sulphur, it has gathered until a sort of marsh or puddle, of perhaps ten rods in diameter has been formed. Here it lies mixed with mud, leaves, sticks, and every ingredient that accident has thrown into it. The mass is so considerable that it would be easy to shovel up cart-loads of it; but I did not hear that any attempts had been made to refine, purify, or in any other way to manufacture it.

If I was disposed to offer a conjecture concerning the production of this inflammable air, and of the sulphur which accompanies it, I should derive them from the animal remains which make so large a proportion of the calcareous strata hereabout. The rocks at this place, as well as at Niagara, and along the shores of Lake Erie, are remarkable for the fetid smell, they emit, on being rubbed or struck. This leads to a belief that both hydrogen and sulphur enter into their composition. This is further manifested by the frequent appearance of them both where these beds of materials are undergoing spontaneous decomposition from internal causes. In such cases, they are evident to the senses in their proper and separate forms. The incrustations of sulphur, in the fissures of some rocks, and the extrication of hydrogen gas from the crevices of others, in this curious and interesting region, persuade one strongly, that such is the fact.

How it happened that organic substances make part of the deep and extensive strata which underlay this country, may be resolved into the greater question, by what means such materials enter into the composition of rocks in other parts of the world, and in situations very remote from the ocean. They lead the mind by indubitable evidence to the time when in ages too distant for the chronologist to compute, the waters of the sea covered the face of the land.

The country lying south of lakes Ontario and Erie, bears within itself full testimony of the former dominion of oceanic water there. The salt springs in Galen, Montezuma, Salina, and other places, may be conceived as proceeding from beds of sal-gem in the bowels of the earth. And this native salt may be considered as a deposite made from the brine of the sea, sometime since the strata of lime-stone were formed. When the salt-water withdrew to the lakes,

the upland was gradually freed from its salt, here, as in other places, by the rains and the floods. The land being thus freshened, the salt-water collected in the lakes and reservoirs; and had there been no outlets, they would have been collections of briny fluids still. But as all the lakes of our continent have channels for discharging their contents, it has happened in the course of aqueous circulation, that the primitive saltness has disappeared, and these reservoirs of salt-water are now filled with fresh. The lakes of North America have long since undergone the freshening operation which the Black Sea is now undergoing. For it may be predicted that the Euxine which is now but a brackish water, will, in process of time, lose the whole of its saltness.

The lakes having undergone this transformation, and so altered their character, we look at first with surprize upon the salt and shells which are left behind. These, however, are monuments of the former state of things; and when duly considered by the light which geology affords, enable us to comprehend many of the facts which would be otherwise inexplicable.

My theory, then, of the sulphureous springs at Clifton is concisely this: before the water of the ocean retired to the lakes, strata of lime-stone were deposited, and as parts thereof, vast quantities of shells, and other remains of testaceous and perhaps other animal matter. From these, there are extricated in some places, hydrogen gas and sulphur: and water, gushing along, carries with it a portion of the lime. The hydrogen gas so separated, is the menstruum for the sulphur, and the water for the lime. On coming into the open air, the portions of sulphur and lime which the gas and the water cannot any longer retain in solution, are precipitated on the adjacent bodies.

FOREIGN.

Incarcerated Rupture.

Rupture is so general a disease, and in its aggravated state so frequently and suddenly fatal, that every information which promises relief, particularly from the regular practitioner, ought to be universally known. We therefore give the following extract from a work lately published by Mr. Edward Geoghegan, in which an improvement in the treatment is suggested.—"I place the patient in a recumbent position, with his shoulders a little raised to relax the trunk, but the pelvis not raised, as that would put the fasciæ on the stretch. The knees are to be drawn up. If the parts have not been irritated by handling them, or the body disturbed by jolting it about, or by any such roughness, I proceed directly to apply cloths wet with cold water, expose the entire body naked to the air, the doors and windows being open. This practice usually succeeds within an hour*. If it does not, I surround the hernia with my hand or hands at about its middle, in the way that I would grasp a gum elastic bottle, to press out its air or other contents, by gently approximating its sides, always holding in view, that the tumour is to be *emptied*, and not *pushed up*. I never press the hernia in any direction, or at all towards the abdomen. When it is small, it may be done with the finger and thumb of one hand. Having applied the hands, I do not remove them for fifteen or twenty minutes, aware that reiterated impulses irritate, and that the effects of compression are lost each time that it is intermitted."—In cases of great pain and tension he omits this practice.—This practitioner differs from every other so far, as that the usual directions are to press the protruded bowel up towards the belly, which he takes great pains to show is improper, and insists that the contents should be merely squeezed out.

[*Philosophical Magazine.*

* In some cases where I could not immediately attend, I have directed that cold applications should be used until my arrival and after an hour, they informed me that they were seized with a shivering, that they heard the wind rush out of the hernia, and that they were instantly relieved.

Efficacy of Magnesia in Calculus.

Mr. BRANDE has laid before the Royal Society of London, some observations, accompanied with cases and experiments, on the effects of magnesia in preventing an increased formation of the uric acid ; with remarks on the composition of urine. Mr. HOME's enquiries into the functions of the stomach led him to consider that the generality of calculous complaints might possibly be prevented, by introducing into the stomach such substances as are capable of preventing the formation of the uric acid. On putting this theory to the test of experiment, it was found, by an examination of the urine, that, in several instances where there was an increased formation of uric acid, magnesia diminished it in a much greater degree than had been effected by the use of the alkalies. The paper read before the Royal Society contained the result of Mr. Home's and Mr. Brande's labours, with a view to establish a fact of so much importance in the treatment of those diseases. One case mentioned, is that of a gentleman sixty years of age, who had been in the habit of indulging in the free use of acid liquors, had repeatedly passed small calculi composed entirely of uric acid ; his urine at all times deposited a considerable quantity of that substance in the form of red powder, and occasionally in larger crystals. The alkaline medicines were tried, without effect, though continued a year and upwards. The patient was directed to take fifteen grains of magnesia three times a-day, in an infusion of gentian: in a week the uric acid was found to have diminished in quantity, and the use of magnesia being persevered in for eight months, there were during that time no calculi voided, nor any material deposit in the urine. The patient was also much troubled with heart-burn, and with a sense of weight and uneasiness about the region of the stomach, both of which symptoms likewise disappeared.

In another case the gentleman had during four years occasionally voided considerable quantities of uric acid in the form of red sand, and had once passed a small calculus. His urine was generally more or less turbid, and after taking any thing which disagreed with the stomach, even in a slight degree, the red sand often made its appearance. He made trial of the alkalies, but without success. He was now directed to take magnesia, in the dose of twenty grains every night and morning, in a little water: for three days his bowels were much relaxed, but they afterwards became

regular. He persevered in its use six weeks, and during that period his urine was several times examined, and was found to contain no superabundant uric acid, and he had not the slightest return of his complaint, though he had put himself under no unusual restraint of living. The other cases given in this paper are equally to the point; from which Mr. B. infers that the effects of magnesia taken into the stomach are in many respects different from those produced by alkalies, in those patients in whom there is a disposition to form a superabundant quantity of uric acid.

We have now an account of some experiments with soda, magnesia, and lime, to ascertain the effects on healthy urine, when taken under the same circumstances. With respect to the soda, the effect of the alkali upon the urine was at its maximum in a quarter of an hour after it had been taken into the stomach, and in less than two hours, the whole alkali passed off. A similar conclusion was drawn from the experiment where soda with an excess of carbonic acid was used.

The experiments on magnesia shew that, even in large doses, it neither produces so rapid an effect upon the urine, nor so copious a separation of the phosphates, as the alkalies; and on this its value as a remedy in calculous disorders seems materially to depend. The lime was found to be of but little use in complaints of this sort.

London Monthly Magazine.

OBITUARY.

Died 14th October, 1810, at Darien, in the ſtate of Georgia, Dr. Richard Ashinger Ball, a native of this ſtate, and ſon of *Dr. Isaac Ball*, of this city.

This young gentleman, who had paſſed through a courſe of medical ſtudies in this city, and had afterwards ſettled as a practitioner of phyſic in Georgia, fell a victim to an autumnal fever, in an unhealthy diſtrict of that ſtate. Cut off in the dawn of his reputation and uſefulneſs, and at a diſtance from his relatives and native home, the fate of this reſpectable young phyſician is deeply and ſincerely regretted by all his acquaintance. His aſſiduity in buſineſs, the mildneſs and urbanity of his manners, the correctneſs of his moral deportment, and his exemplary dutifulneſs to his parents, attracted a great portion of public eſteem and reſpect, and render his death a ſerious loſs to the community.

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(Or the fourteenth from the commencement.)

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